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Transatlantic doors opening
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Romania
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Europeans soon to rival the US
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50 years of miracles
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World Business Newspaper http://www.FT.com WEDNESDAY FEBRUARY 4 1998

WORLD NEWS

Germany set to launch jobs scheme to ease unemployment

Germany's coalition government reached broad agreement on a job creation deal for long-term and young unemployed, in a bid to defuse public anger over the country's jobless crisis. Page 2

EU calls for worker dialogue
Employers in the European Union have been warned by the European Commission that they must agree soon to negotiate a deal on improving dialogue with workers or risk having legislation imposed on them. Page 2

20 killed in cable car crash
Twenty people were killed after a US warplane severed a cable car line while on a training flight in the Italian Dolomites. The cable car was travelling from the town of Cavalese to the top of Cermis mountain, a popular ski resort.

Italian tax fraud trial begins
Italy's former prime minister, Silvio Berlusconi, went on trial on tax fraud charges linked to the purchase of land around his family villa near Milan. Page 2

Call for water charges
The European Commission is pressing Ireland to fall into line with other European Union member states by introducing domestic water charges. Page 3

Greek consensus on euro
A consensus on European economic and monetary union is emerging between moderates in Greece's Socialist government and conservatives who back the government drive for membership of Emu by 2001. Page 3

Turkish PM hints at elections
Turkish prime minister Mesut Yilmaz said he might be forced to call general elections in September, contradicting earlier statements that he would remain in office until 2000. Page 2

Arabs lukewarm on air strikes
US efforts to secure Arab backing for possible air strikes against Iraq seem to have won a lukewarm response. Page 6

Clinton accused over budget
US Republicans accused the Clinton administration of submitting a 1999 budget which violated previous agreements, while imposing the highest level of federal taxation on the American people since 1945. Page 9

Nuclear ship warning
Caribbean governments said the passage through the region of The Pacific Swan, a UK-flag vessel which is carrying nuclear waste from Europe to Japan, was a danger to the area. Page 6

Castro rejects US food plan
Cuban President Fidel Castro has rejected a proposal for the US to send food and medicine donations to Cuba while maintaining its economic embargo. Page 9

Israel prepares for attack
Benjamin Netanyahu, the Israeli prime minister has allocated $68m to boost medical and civil defence in case of an Iraqi missile attack on Israel. Page 6

BJP pledges to put India first
India's Bharatiya Janata party pledged to put "India first" in a nationalist election manifesto which foresees a "small role" for foreign investment. Page 4

Indonesians riot as prices soar
Rising inflation sparked riots in the Indonesian city of Malang in Java, signalling a rapid spread of anger over the country's economic downturn. Page 4

Poachers threaten king beetle
The British stag beetle is set to join the elephant and rhinoceros in the pantheon of protected species, as ministers seek to thwart a lucrative international trade in the endangered insect. Page 14

BUSINESS NEWS

Matif exchange hit by strike over electronic trading plans

A strike by self-employed traders protesting against reforms linked to the introduction of electronic trading disrupted activity on Matif, the French futures and options exchange. Fewer than 100,000 contracts were traded on the first day of the strike on Monday, and only 133,000 contracts changed hands yesterday compared with an average daily volume of 275,000. Page 15

Dresdner Bank, Germany's second biggest, announced the purchase for an undisclosed sum of Kleinwort Benson Iberfomento, a Madrid financial firm in which Kleinwort, Dresdner's merchant banking unit, took a 50 per cent stake in 1991. Page 17

Reuters shares fell 5 per cent in London from 548 to 520p, bringing to £1.7bn ($2.7bn) the fall in its market value since the financial data company disclosed it faced an industrial espionage inquiry in the US. Page 9; London stocks, Page 30

Schroders, the London-based investment bank, has been chosen by the Polish government to advise on and arrange the flotation of the country's state telephone operator, Telekomunikacja Polska. Page 16

Rostelekom, Russia's dominant telephone operator, saw strong growth in long-distance and international traffic last year, providing evidence that the economy may be rebounding faster than believed. Page 2

Heidelberger Druckmaschinen of Germany, the world's biggest maker of printing equipment, is keen to restart talks about acquiring part of Roland, a division of German engineering company MAN. Page 17

Cecimo, the trade body for western Europe's machine tool industry, forecasts that output will expand by 6 to 7 per cent this year on an upturn in factory investment across Europe plus strong US demand. Page 8

Airbus Industrie, the European aircraft maker, has signed a preliminary $2.6bn deal to supply 76 aircraft to Spanish national airline Iberia – its largest single European order. Page 8

The Norwegian central bank launched an international bid contest by seeking tenders for equity portfolios on behalf of the NKr114bn ($15.4bn) Government Petroleum Fund. Page 16

Fauchon, the French delicatessen business, disclosed that current owner Martine Premat had conditionally agreed to sell control to Société Waldo, a Paris investment bank. Page 16

PacifiCorp challenged potential rivals for Energy Group, announcing a new recommended offer valuing the UK-based power and coal group at £4.05bn ($6.6bn). Page 20; Lex, Page 14

The US will establish a special enforcement panel to monitor access to Japan's photo film market now the World Trade Organisation has ruled against the US in its dispute with Tokyo.

Sumitomo, one of Japan's largest banks, could have to pay up to 10 per cent interest on securities it plans to issue in the next few days. Page 15

Union Bank of Switzerland won overwhelming shareholder approval for its merger with Swiss Bank Corporation. Page 15

Investors poured into Malaysia's stock market yesterday, pushing the key index up 23 per cent. Page 6; World stocks, Page 34

Big Six face Brussels quiz over profits from auditing

By Jim Kelly, Accountancy Correspondent

The European Commission has sent a confidential questionnaire to the Big Six accountancy firms seeking detailed information on their profits from statutory audits.

The inquiry aims to establish to what extent the firms discourage competitors in the statutory auditing business by setting artificially low prices. It is part of the Commission's wider antitrust investigation into the proposed mergers between Coopers & Lybrand and Price Waterhouse, and KPMG and Ernst & Young.

Answers to the 36 questions should reveal whether the firms "lowball" – offer to do audits for less than cost – and recoup their losses later, either from services such as tax or management consultancy or from increased audit fees over several years.

"These questions are very sharp," said one international regulator. "They go for the jugular. Van Miert [the competition commissioner] wants to know if the Big Six audit market is closed – and whether it is growing."

If the Commission decides the firms have been excluding competitors from the audit of big companies, it could insist on much more intrusive regulation before allowing the mergers to go ahead.

It appears from the questions that the Commission is also concerned about how far the Big Six control self-regulation in the accounting profession and whether this should continue in a less competitive market.

The firms have been given until February 9 to return the completed questionnaires. They can elect to designate the data as "business secrets" to preserve the confidentiality of what would be enormously sensitive commercial information.

Some observers believe Mr Van Miert is using the inquiry as a "fishing expedition" to investigate the pricing strategies of the Big Six firms. However, the questionnaire will inevitably be seen as a signal of serious concern.

Senior accountants said there were doubts the firms could produce the data required because audit was not accounted for separately in many instances.

The Commission, which can fine firms that do not reply, wants to know:

- How they work out the cost of audits for multinational companies. It also wants copies of the last five tenders made for new audit clients;
- How the firms measure profitability in auditing, with figures for the last five years from all their member firms within the European Economic Area.It also wants the same figures for the other service lines such as tax and management consultancy;
- How much the firms charge in fees at each company they audit with sales of more than Ecu500m ($555m);
- How the post-tax profits from the audits are shared out between staff and partners;
- Where the Big Six get their audit staff from, and how mobile skilled staff are between the firms;
- How much it would cost to get into an auditing market, such as bank auditing, from scratch;
- How often so-called "second-tier" firms outside the Big Six can break into the market, or get pushed out by the global firms.

Chilean firm defects, Page 18

Wildlife puts Lukoil licences in jeopardy

By Chrystia Freeland in Moscow and Robert Corzine in London

Lukoil, one of Russia's leading oil companies, risks losing potentially lucrative Caspian Sea oil licences in a turf war between Russia's powerful oil giants.

Lukoil's licence to explore oil deposits in the Russian sector of the northern Caspian Sea has been put in jeopardy by Yuri Skuratov, Russia's prosecutor-general, who said this week that oil extraction in the area violated a law protecting local wildlife.

The prosecutor's protest has highlighted both the tensions between Russia's oil barons as they compete for supremacy in the lucrative oil sector and the Byzantine nature of Russia's legal system.

Mr Skuratov's objections follow a challenge from Yukos, another Russian oil company, which had bid for the licences. Yukos, which last month merged with Sibneft, another oil company, to become Russia's largest oil producer, accused the government of "scandalous procedural infringements" in awarding the December 19 tender for the Severny field in the north Caspian Sea.

Western analysts say Lukoil was probably best placed technically to exploit the area, given that the geology is similar to that of its operations in Astrakhan.

But Mr Skuratov is now objecting to the award of the licence on different grounds, citing a 1975 law that protects the northern Caspian as a wildlife preserve and forbids the extraction of mineral resources in the area. The shallow waters of the north Caspian are the breeding grounds of the sturgeon, a fish that has already been endangered by poachers seeking its caviar.

Ironically, if the government upholds Mr Skuratov's charge, both oil companies could be

Continued on Page 14
Lukoil buys Petrotel, Page 16

Malaysia lets foreign workers stay

World Bank president James Wolfensohn on a visit to Malaysia, which has decided against repatriating Indonesian workers to help avoid aggravating the situation in Indonesia. Mr Wolfensohn had expressed fears about the affects of the Asian economic crisis on poverty and unemployment. Page 4 Reuters

DTB surges ahead of Liffe in key 10-year bund futures

By Edward Luce in London

Germany's leading derivatives exchange has struck another blow against its London rival in the battle to control the European futures and options market before economic and monetary union next January.

The Frankfurt-based exchange – the Deutsche Termin Börse – for the first time last month overtook its London competitor in the most traded derivatives contract in Europe, the German 10-year government bond future.

DTB took a 56.5 per cent share in trading of the German 10-year government bond future last month. The contract is considered a vital battleground to decide which exchange dominates the market in derivatives trading after Emu. Derivatives are contracts based on underlying cash markets such as bonds, interest rates and currencies.

"Liffe is now in serious trouble over the German bund contract," said Neil Meharg at Tullet & Tokyo, one of London's leading brokerage houses. "You could even say it is in full retreat."

Until early 1997, Liffe won more than 70 per cent of trading in the German government bond future. Now Liffe members are expressing growing concern at the increased competitiveness of its German rival. The DTB, which recently formed an alliance with Soffex, its Zurich-based counterpart, and Matif in Paris, to trade common contracts on one electronic system, has embarked on an aggressive strategy to end Liffe's predominance before Emu.

In spite of the success of DTB in the German bond future, Liffe still trades more contracts overall than the DTB, with more than 20m futures and options traded in January compared with more than 13m contracts on the DTB. However, the gap is narrowing, say traders. "Now that the DTB is winning on the German bund future it will concentrate its fire on the short-term interest rates contracts and on options," said one London banker.

Liffe trades roughly the same number of contracts as its three main European rivals put together, but members say the exchange is increasingly hamstrung by its relatively high cost base. Its open outcry pit trading system requires much greater overheads than the DTB's electronic system.

Liffe says computer-based trading is less efficient and less liquid than the open outcry system. But the DTB has introduced software that enables dealers to execute complex – or multi-position – deals,including manoeuvres currently dominated by Liffe. Nevertheless, Liffe still has more than a 95 per cent share in German bund options and more than 80 per cent of all interest rate contracts of countries likely to be part of the first wave of Emu.

"DTB still has a very tough mountain to climb," said one London broker. "But once it has reached a critical mass like it has in the the bund future, everyone starts switching over to the electronic system."

French traders strike, Page 15

Markets

STOCK MARKET INDICES		
New York: lunchtime		
Dow Jones Ind Av	8,085.86	(-21.92)
NASDAQ Composite	1,659.07	+6.18)
Europe and Far East		
CAC40	3,188.43	(+0.93)
DAX	4,332.52	(+9.71)
FTSE 100	5,612.8	(+13.8)
Nikkei	17,022.98	(+246.16)
US LUNCHTIME RATES		
Federal Funds	5.43%	
3-mth Treas Bills: Yld	5.229%	
Long Bond	103¾	
Yield	5.857%	
OTHER RATES		
UK: 3-mo Interbank	7½%	(same)
UK: 10 yr Gilt	108.672	(108.594)
France: 10 yr OAT	103.21	(103.21)
Germany: 10 yr Bund	106.88	(106.78)
Japan: 10 yr JGB	108.11	(108.70)
NORTH SEA OIL (Argus)		
Brent Dated	$14.775	(15.17)

GOLD		
New York: Comex		
Feb	$295.8	(303.4)
London:		
	$297.25	(302.55)
EXCHANGE RATES		
Dollar		
New York: lunchtime		
£	1.6445	
DM	1.814	
FFr	6.0855	
SFr	1.4665	
Y	125.87	
London:		
£	1.6426	(1.6354)
DM	1.819	(1.8223)
FFr	6.0968	(6.1063)
SFr	1.4714	(1.4765)
Y	126.215	(126.76)
Tokyo close		Y 126.15
Sterling		
DM	2.9876	(2.9819)

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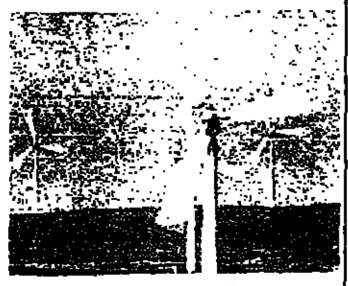

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NEWS: EUROPE

Germany to launch new jobs package

By Peter Norman in Bonn

The three parties in Bonn's coalition government reached broad agreement yesterday on a job creation package for long-term and young unemployed to defuse rising public anger over Germany's jobless crisis.

With newly militant groups representing the jobless threatening demonstrations in more than 200 towns tomorrow, coalition leaders met under the chairmanship of Helmut Kohl, the chancellor, to agree measures centring on the employment by local authorities of 100,000 long-term unemployed.

The plans are due to be announced in parliament tomorrow after publication of official figures that are expected to show that seasonally unadjusted unemployment rose to between 4.8m and 4.9m in January – a new post-war high.

Günter Rexrodt, the economics minister, disclosed that the package would also support infrastructure investment, technical innovation and business people wanting to set up new companies.

However, Theo Waigel, the finance minister, made it clear that the government was not planning a big Keynesian boost in public expenditure. The idea is that local authorities should provide work for up to 100,000 long-term unemployed that they are already supporting through basic social security payments. They would cover some of the cost by cutting benefits of those who refuse job offers.

The package would also include subsidised training places for unemployed and unqualified school leavers. Support for new entrepreneurs and infrastructure is likely to be a tidying up of existing incentive schemes, rather than a new initiative.

The opposition Social Democrats and the trade unions voiced scepticism about the plans. Rudolf Scharping, SPD leader in the Bundestag, the lower house of parliament, said that some of last year's Bundesbank profits, which are expected to be a record, should be used for retraining and subsidising employment.

Klaus Zwickel, leader of the powerful I G Metall trade union, said it was increasingly clear that the government's achievement was to produce fewer rather than more jobs.

The federal statistics office announced yesterday that average employment fell by 1.3 per cent, or 465,000, to 34m last year. It was the sharpest rate of decline since 1993 and brought the loss of jobs since German unification in 1990 to 3.4m.

Meanwhile, Creditreform, a German business information group, forecast that company failures this year would increase to 36,000 from 34,100 in 1997 suggesting that more job losses are on the horizon.

Long distance growth for Rostelekom

By John Thornhill in Moscow

Rostelekom, Russia's dominant telephone operator, saw strong growth in long-distance and international traffic last year, providing fresh evidence that the economy may be rebounding faster than widely believed.

In an interview, Oleg Belov, Rostelekom's president, said inter-city traffic grew 12.2 per cent last year, reflecting an increase in both personal and business calls as well as higher levels of data exchange. "This is a very good indicator because there has never been such a rate of growth in previous years. People have begun to talk more among themselves," Mr Belov said.

"It indirectly confirms that the numbers contained in official statistics [showing a 0.4 per cent growth in gross domestic product last year] have real significance."

Economists have long drawn links between the frequency of telephone calls and broader business activity – especially in Russia, where much of the economy goes unrecorded. The latest preliminary telephone traffic figures also highlight Russia's increasing integration into the world economy.

Mr Belov said incoming international calls grew by 5.6 per cent in 1997, highlighting increased foreign interest in Russia, while outgoing calls rose 19.7 per cent.

"For us this is a very optimistic, pleasant fact which shows that all the investments we have made in upgrading our network have been matched by increased demand," he said.

Mr Belov said Rostelekom had invested about \$1.5bn since 1992 in expanding its network while the volume of calls was also stimulated by a lowering of tariffs.

Rostelekom, which has been partly privatised, accounts for 85 per cent of all Russia's long-distance and international traffic, but is facing increasing competition from independent and foreign operators. Mr Belov said there was still enormous pent-up demand, in the telecommunications market with 12m Russians waiting for a telephone installation.

However, foreign investor interest in the telecommunications sector was dealt a severe blow last month. Moscow City Telephone (MGTS), one of Russia's biggest regional telephone operators, threatened to exercise its right to increase its share capital by 50 per cent to the benefit of the city government.

"This is the first case when minority investors have got screwed in the telecoms sector and one has to worry about it," said Diana Zehetner, a Russian equity analyst at Flemings, the London-based stockbrokers.

EU urges boost to worker dialogue

By Michael Smith in Brussels

Employers in the European Union have been warned they must agree soon to negotiate a deal on improving dialogue with workers or risk having legislation imposed on them.

Padraig Flynn, EU employment commissioner, is understood to have told the Unice and CEEP employer organisations he wants to meet them this month to discuss their final position on entering talks.

He has warned that the Commission will launch draft legislation if employers do not take up their right under the EU's "social protocol" arrangements to negotiate a deal with unions on information and consultation with employees.

Many employers oppose Commission plans for legislation to establish a "fundamental right" for workers to be consulted and informed on "strategic and economic" decisions likely to affect them.

They are backed by the UK government, holder of the EU's rotating presidency. It believes the proposals are unnecessary and would interfere with existing practices in Britain and other countries.

Under laws adopted by EU countries in the past few years, companies with at least 1,000 employees and operations in two or more countries must consult and inform their employees through "works councils" about strategic decisions.

The Commission wants to extend similar, though less prescriptive, obligations to smaller employers even if they operate in one country only. It has not specified the size of companies to be affected, but options include 50 or 100 workers.

Mr Flynn said in November that EU rules were needed because national legislation was not always capable of anticipating social problems arising from company decisions. He believes most states would support EU rules.

He thinks a deal between employers and unions would produce better results than legislation framed by the Commission, and has agreed to extend the consultation period beyond the six weeks initially suggested, to allow employers' organisations to talk to their affiliates.

Zygmunt Tyskiewicz, Unice secretary-general, said many employers did not believe worker consultation was an EU issue. Some felt the Commission had ignored their views in an earlier consultation last June.

However, Unice had told its members it was in their interests to negotiate a deal and was awaiting their views on whether to give Unice a mandate to talk.

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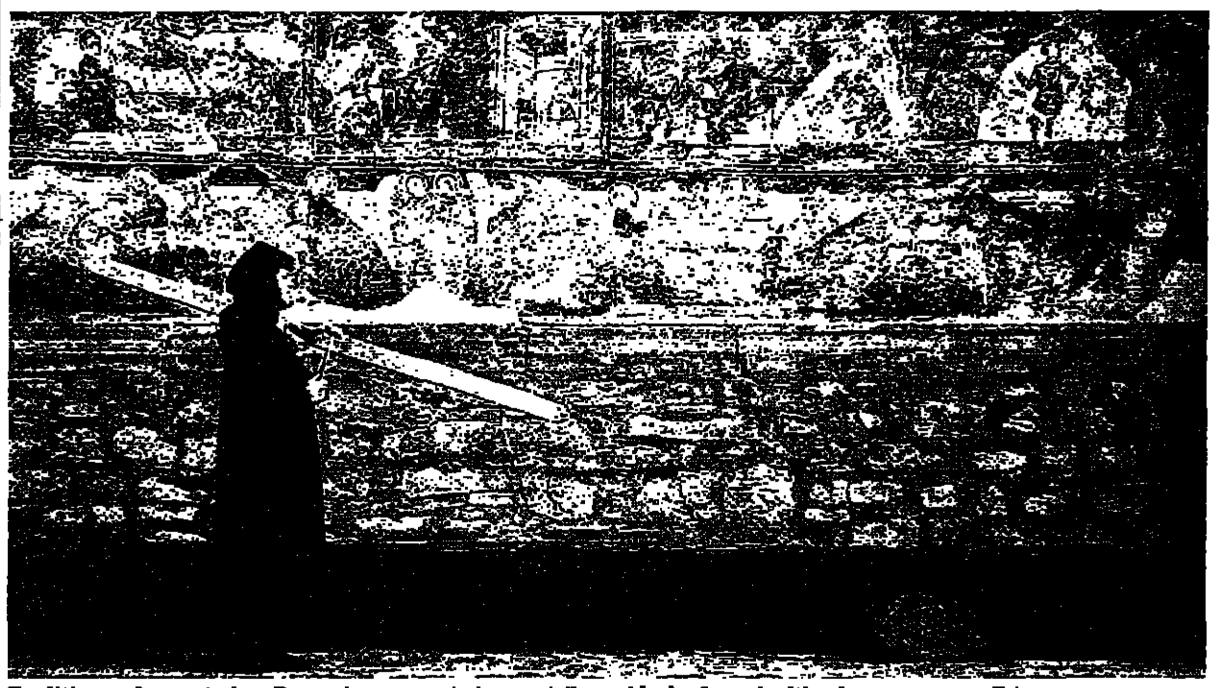


Tradition and poverty in a Romanian convent: A nun strikes a block of wood with a hammer as a call to prayer Victor Mussat

Romanians forced to ponder cost of a dream cathedral

The Romanian Orthodox Church is, as its members like to point out, the second largest Orthodox community in the world and its leaders now feel that they should have a cathedral in Bucharest to match that status. But such grandiose plans have drawn some sharp public criticism, and focused attention on the less savoury aspects of the Church's recent past.

The original proposal was for a "Cathedral of the Nation's Salvation" to hold 11,000 worshippers. The complex was to include a 400-bed hotel and a 1,000-seat conference hall. Members of the government have expressed their support.

Critics accused the Church of having been carried away by envy of foreign cathedrals, especially the vast Cathedral of Christ the Saviour in Moscow, rebuilt in recent years on the initiative of the mayor, Yuri Luzhkov.

The Orthodox Christian Church originated in the Byzantine Empire and broke with the western Latin Church in the 11th century.

Orthodox believers are divided into separate national communities under their own patriarchs, the largest being Russia.

There are about 20m nominal Orthodox believers in Romania. There are more in Ukraine, but they are divided into several different allegiances.

The Romanian Church modified its cathedral after public protests and the capacity was reduced to 5,000, but the other plans have so far remained unchanged.

Some churchmen shrugged off the criticism. "Romania is a powerful country, capable of paying the cost. We have to abandon our humility and show our pride," said one leading clergyman.

Bishop Teofan Sinaitul, Secretary of the Holy Synod, the governing body of the church, stresses that the cathedral is only a proposal.

But he noted: "For all Christian churches, the force of the symbol is absolutely necessary, and it is necessary for us to create a concrete symbol that Romania is no longer living under an atheist ideology."

The bishop acknowledges the argument that with the average salary of Romanians at around \$80 a month, it is not the moment to be building a religious complex at an estimated cost of up to \$130m.

However, he added: "None of Romania's churches has ever been built in a period of prosperity, because due to our tragic history, we've never had any."

The debate on the need for a new cathedral dates back to 1925, when Bucharest was elevated by the church to a status equal in principle to that of Moscow and the other Orthodox capitals. But though Bucharest had many lovely churches, these were all small, reflecting both Romanian tradition and past poverty.

The debate on the cathedral thus became enmeshed with a wider psychological complex, which lingers to this day.

Professor Peter Derer of the School of Architecture in Bucharest said: "Before 1918, the Romanians of Transylvania came under the Habsburg imperial capitals, Vienna and Budapest, with their great palaces, churches and avenues.

"When the peoples of Transylvania became part of Romania, they came to Bucharest and found to their surprise that it was a picturesque town, no doubt, but without great architectural monuments."

He said this set off a defensive Romanian desire to "monumentalise" Bucharest which had continued to this day and had some unfortunate consequences.

The most notorious was the work of the dictator Nicolae Ceausescu, who in the 1980s demolished much of Bucharest to build his Palace of the People and Avenue of the Victory of Socialism. Among the buildings destroyed were three famous monasteries and many churches.

Opponents of the new cathedral say the church did not protest enough at the time against this sacrilege. This forms part of wider criticism of the hierarchy for collaborating with the Communist regime and especially with the Securitate, the secret police.

Mr Derer and other critics have suggested that rather than a new complex, the church should rebuild one of the destroyed monasteries as a new patriarchal headquarters.

A suitable site would be one of the wastelands of dust and rubble left undeveloped by the Ceausescu regime in the neighbourhood of the Palace of the People.

Not all priests are completely happy with the proposed cathedral, either. Father Iustin Marchis of the Stavropoleos church in Bucharest said the desire for a new cathedral was correct, but the timing was wrong given the economic suffering of ordinary people.

He said the first priority should be to rebuild parish churches to recreate local religious communities.

It worries him that the government embraced the project so quickly and that the state is so closely involved in it. "We need to go more slowly, and before doing anything, to pray, think and hold debates and competitions. A church cannot afford to make mistakes the way a government can."

Anatol Lieven

Yilmaz hints at early Turkish election

By John Barham in Ankara

Mesut Yilmaz, Turkey's prime minister, yesterday admitted he may be forced to call general elections as early as September.

This runs contrary to his statements after taking power last summer that he would remain in office until 2000, the latest date by which elections have to be held.

Mr Yilmaz said in a Turkish newspaper interview yesterday: "There will be no elections for seven or eight months, but I cannot see further than that. There could be an election in eight or nine months."

He did not explain what made him change his mind, though most political and financial market analysts doubt his weak three-party coalition, which lacks a majority to push important reforms through parliament, could last much beyond the spring of 1999.

Analysts speculated the government might call early elections, after the constitutional court last month closed Welfare, the opposition Islamist party, for "conspiring" against the secular order. The Islamists hold the most seats in parliament and have a formidable electoral machine, but might not have time to regroup for early elections.

Mr Yilmaz, leader of the conservative Motherland party, apparently still sees the Islamists as his principal foes. He said: "Our biggest responsibility is to show the people do not need a political representative for their religious belief."

He warned that Welfare, which opinion polls show is tied in first place with Motherland with 21 per cent support, "cannot get that many votes, and if they do they cannot take office. If Welfare wants power it should adapt to the rules of the system."

However, Mehmet Sami, senior vice-president at ATA Securities, an Istanbul brokerage, said Mr Yilmaz's statement should not be taken at face value. "Yilmaz has not done much over the last six months. The people want results. I do not see how the current situation could benefit Motherland," he declared.

Last October, Mr Yilmaz said he needed to stay in office until 2000, long enough to introduce a three-year reform programme to cut the soaring inflation rate.

However, divisions in the government have blocked progress over privatisation and reform of the deficit-ridden social security system. Negotiations with the International Monetary Fund have made little headway.

Analysts say the government could improve its electoral fortunes if it lowered inflation and dislodged Tansu Çiller as leader of the rival conservative True Path party. This would allow Mr Yilmaz to take sole command of the centre-right, Turkey's political heartland.

US aid for haute cuisine

By Andrew Jack in Paris

French cuisine may have built up a hugely successful reputation around the world, but one of its leading training schools has had to seek American help to survive.

The Ecole des Arts Culinaires et de l'Hôtellerie near Lyon, the only top-level "école supérieure" for cooking in the country, has been saved from bankruptcy by a consortium which includes the Culinary Institute of America.

The school, whose management board included such well-known French chefs as Paul Bocuse, its honorary president, has attracted more than 300 students since it opened in 1989, but it has always generated losses, and had an accumulated deficit of FFr13m (\$2.12m) last year.

Max Marcadet, the managing director, who helped broker the new rescue package, said yesterday that his predecessors had focused more on developing the training aspects of the school than on its financial management.

However, he said, it had largely been the victim of French political "cohabitations". An idea of Jack Lang, the Socialist minister of culture in the mid-1980s, the plans were modified under his centre-right successor François Léotard. The school was neglected when Mr Lang returned to power in the late 1980s.

As a result, the then management decided to open before receiving any of the government money that had originally been promised and continued to operate with no capital of its own. It was financed by a loan at high interest rates, costing FFr1.8m a year in debt service.

Gérard Pélisson, the joint founder of Accor, the French hotel group, has agreed to take over the school in a consortium with Christian Lameloise, head of Société des Hôtels de Bourgogne, an Accor franchisee. The Culinary Institute of America will provide teaching help as well as some US students who want to learn the art of French cooking.

The new backers have also discussed funding a FFr30m hotel project to be completed by 2000, which would be entirely staffed and managed by students.

NEWS DIGEST

President of Armenia quits

Armenia's president, Levon Ter-Petrosyan, announced his resignation yesterday after key supporters abandoned him, apparently over a territorial dispute with neighbouring Azerbaijan. Mr Ter-Petrosyan, who has led Armenia since independence in 1991, won another presidential term in 1996. Opponents charged that he rigged the polls.

He has lately found himself battling the prime minister, Robert Kocharyan, over policy towards Nagorno-Karabakh, the disputed Armenian-populated enclave in Azerbaijan. Fighting broke out between Azeris and Armenians over Nagorno-Karabakh in 1988, and thousands of people were killed before a fragile ceasefire took effect in 1994.

The Karabakh Armenians have declared independence as a prelude to eventual union with Armenia. But Mr Ter-Petrosyan urged concessions in the dispute, saying they would help Armenia repair its devastated economy and avoid international isolation. Mr Kocharyan accused the president of making too many concessions. The power struggle caused a split in Mr Ter-Petrosyan's ruling Respublica bloc on Monday and prompted a defection of several senior officials, including the foreign minister, Alexander Arzumanyan, and the central bank chief, Bagrat Asatryan. *Reuters, Yerevan*

■ BERLUSCONI CHARGES

Tax fraud trial starts

Italy's former prime minister, Silvio Berlusconi, went on trial yesterday on false accounting and tax fraud charges linked to the purchase of land around his family villa on the outskirts of Milan, judicial sources said. The opposition leader and 13 other people, including executives from his Fininvest empire, are accused of under-declaring the official purchase price of the land to avoid paying taxes.

The trial is one of three that Mr Berlusconi, 61, is facing. In separate cases, he is accused of establishing illegal slush funds and bribing tax inspectors. He has denied any wrongdoing. Last year, the media mogul was handed his first conviction – a 16-month sentence for false accounting in a case involving the acquisition of a film business by Fininvest. A judge said Mr Berlusconi, prime minister for seven months in 1994, had been found guilty but would not go to jail. *Reuters, Milan*

■ NUCLEAR POWER

Reactor closure confirmed

The French government has confirmed the permanent closure of the controversial Superphénix nuclear reactor, the largest fast reactor ever built, dealing a blow to the country's powerful nuclear lobby. But in an apparently contradictory move, the older and smaller Phénix, France's other fast reactor, is poised to be restarted. This is to enable the pursuit of experiments that will help France to decide in 2006 how best to dispose of the waste from its extensive network of nuclear reactors. These generate about three-quarters of France's electricity.

The decisions put cabinet unity in the Socialist-led government of the prime minister, Lionel Jospin, under strain. Dominique Voynet, the Green environment minister, said she would have preferred Phénix not to be restarted. By contrast, Robert Hue, the Communist leader, said his party was against the closure of Superphénix.

Charles Millon, the former defence minister, now president of the Rhône-Alpes regional council where Superphénix is located, attacked the "diktat of a Green group which is necessary to the plural majority at the national level". *David Owen, Paris*

■ FRENCH TEACHERS

Protests over cuts

Almost half the secondary school teachers in France went on strike yesterday to protest against the outspoken reform plans and personality of the education minister, Claude Allègre. The protests, called by the main secondary teachers' union, had little to do with pay and reflected a general insecurity in the teaching profession over cuts in government spending and the prospect of a shake-up. Mr Allègre has called the teachers' unions out of date and is ready to court unpopularity by decentralising education and linking the curriculum closer to the needs of the job market.

His stance, which appears to have cabinet backing, contrasts with the Socialist-led government's more cautious treatment of the unions in other areas. Yesterday's strike, observed on average by 40 per cent of the teachers, followed earlier strikes by primary school teachers over the way changes in their qualification requirements had created unfair pay differentials. *Robert Graham, Paris*

■ NATO EXPANSION

Denmark ratifies admissions

The Danish parliament yesterday ratified the admission to Nato of the Czech Republic, Poland and Hungary, making Denmark the first alliance member to approve the enlargement. The three former Warsaw Pact members have been invited to join the 16-member Nato in 1999 and signed protocols of accession on December 16.

In a 97-17 vote, parliament ratified the text presented by the foreign minister, Niels Helveg Petersen. The opponents included members of two left-wing, anti-Nato parties which oppose the enlargement because in their view it could mean more nuclear weapons deployed in Europe. *AP, Copenhagen*

■ FINNISH PRIVATISATION

Revenues may exceed target

Finnish state revenues from privatisations this year may exceed the FM2bn (\$364m) target set out in the state budget, the finance ministry budget chief, Erkki Virtanen, said yesterday. The government budget does not specify where the FM2bn would come from, but the amount is smaller than the privatisation plans already announced for this year. The government has already said it aims to raise FM2bn-FM4bn selling shares in Telecom Finland alone. It also wants to broaden ownership in a new group to be formed by merging Neste and Imatran Voima (IVO).

Also, without a specified schedule, it plans to privatise part of a holding company comprising banking groups Postipankki and Finnish Export Credit Ltd. Mr Virtanen said the government may continue reducing holdings in some other listed companies. *Reuters, Helsinki*

■ LITHUANIAN FLOTATION

State to sell bank stake

Lithuania's finance ministry said yesterday it expected to sell the 86 per cent state-run Agricultural Bank to a strategic investor by the end of 1998. Agricultural Bank is the third largest bank in terms of assets, which were 1.46bn litas (\$364m) at the end of December. The bank's unaudited loss for 1997 was 29.8m litas.

He said an active marketing programme to sell the bank would be launched in May and an open tender was part of the move. "We are expecting to complete the sell off of the bank in the second half of 1998," he said. The government has chosen Deloitte & Touche, Nomura and Lithuanian brokerage Vilfima to advise on the privatisation. *Reuters, Vilnius*

NEWS: EUROPE

Dowdy German media aunt gets a new suit

Die Zeit's editor aims to regain the paper's status as a forum for lively intellectual debate

Like so many German institutions, Die Zeit, the esteemed liberal weekly newspaper, has become somewhat flabby and complacent. The "old aunt" is certainly still accorded the begrudging respect typically reserved for an ageing relative. But it is also a touch dowdy, too long-winded and not listened to as much as in the past.

According to Roger de Weck, the paper's newish, youngish editor, this is about to change. "The old aunt is getting new clothes," says Mr de Weck, who was drafted in by Die Zeit's owners, the publicity-shy Holtzbrinck group.

His task is to oversee the rejuvenation of a paper which is older than the Federal Republic and which in its 1960s and '70s heyday had a profound impact on political debate in the former West Germany.

Mirroring shifts in German society at large, Die Zeit was caught by surprise by the great changes which accompanied the fall of the Berlin Wall, and never quite regained its sense of purpose. The biggest shock for it has been the way Germany's intellectuals have become increasingly marginalised in public debate.

The paper's new clothes went on display last week. A redesign by the American newspaper designer Mario García has given Die Zeit a lighter look, which means an increase in the type size and a lot more white space between the lines.

A table of contents has been added – a welcome addition to a paper renowned for its bulk and its expanses of text. Splashes of red here and there add a flirtatious touch. And the word "knowledge" has replaced "trade" in the paper's sub-title.

This last change might appear rather slight. But it gives an indication of the Swiss-born, 44-year-old Mr de Weck's more important plans for Die Zeit: the transformation of the paper's editorial content and tone.

Articles will be shortened and the prose made more terse. But at a time when there is more information available than ever before, Mr de Weck reckons marketing expertise and competence is the best way of earning money and getting more readers.

The 450,000 people who currently buy the paper every Thursday come from Germany's highly-educated classes.

On the commercial side, the paper is the leading carrier of academic recruitment advertisements.

Such company may certainly be civilised. But in recent years the paper has become, as many of Die Zeit's younger journalists admit, out of touch and even boring. Mr de Weck acknowledges this, but says he has started to implement changes to make it a forum for intellectual debate and ideas to reform Germany's ossified institutions.

He has set up a "reform workshop" of journalists drawn from the political, business and "knowledge" departments. Elsewhere, younger journalists have been promoted, with older ones encouraged to try their hands at more regular reporting again. The aim, Mr de Weck says, is to play a more active role in the parts of society agitating for change in Germany.

On the commercial side, the goal is to boost the circulation of Die Zeit to 470,000 by the end of the year. Currently, it has a turnover of DM150m ($84m) and makes a small (undisclosed) profit.

While the political, business and social establishment is still "weighed down by concrete", Mr de Weck senses that beneath the surface, particularly among the young, there is hunger for reform and change.

"There is actually a lot happening on the ground, but it is being held up by ageing institutions. We want to put ourselves at the forefront of reform."

Die Zeit is a good testing ground for Mr de Weck's thesis. In the German newspaper world, Die Zeit is known as the place where journalists only ever leave feet first. Many of the staff who helped establish Die Zeit's reputation when both the paper and the country at large faced material hardship unimaginable in affluent Germany today are still on board.

But such age also brings with it experience and respect. One of the journalists most identified with the paper for the last 40 years is Countess Marion Dönhoff. The octogenarian scion of an east Prussian aristocratic family, she is one of Germany's best known thinker-scribes and a familiar face on the international policy wonk circuit. Her colleague on the editorial board, Helmut Schmidt, the former chancellor, brings the clout of statesmanship.

The challenge facing Mr de Weck over the next few months is to retain such gravitas while ushering in a much needed breath of fresh air. Like the society it claims to mirror, Die Zeit will need to show it has embraced change and embarked on a new and exciting course, and persuade readers that the changes unveiled this week are not a case of too little too late.

Frederick Stüdemann

Subtle changes: the revamped masthead (below) where knowledge (*Wissen*) replaces trade (*Handel*)

Internet access controls unlikely

By Paul Taylor

Further steps are needed to ensure all homes, schools and businesses in Europe have access to the internet, but it is "premature" to consider regulatory measures to achieve that end, said Martin Bangemann, European industry commissioner.

Mr Bangemann, who will open the showcase European Telematics Applications Programme exhibition in Barcelona tomorrow, also said future regulation of the internet should be kept to a minimum.

The EU commissioner said he believed telecoms liberalisation and competition would help accelerate internet and world wide web use in Europe. "We are watching carefully the pace of market developments and national initiatives aimed at ensuring broader public access to the internet.

"However, I believe it would be premature to look to a regulatory obligation to provide such action, or to support the cost of such actions across the telecoms sector – for example through universal service funds as was the case in the US."

He acknowledged that digital telecoms services are still too expensive in Europe, but said competition in the new liberalised environment would "drive down prices as technology developments cut costs."

Mr Bangemann noted over 70 per cent of European subscribers could now access the internet using higher speed ISDN connections, and that by the end of the decade "this opportunity will be available to all subscribers in Europe.

"Some businesses and individuals will want an even higher speed access as video services become more common. Technology developments are opening up new possibilities – over cable networks, over new satellite systems, with optical fibers and with radio links.

"The European Union supports these technology developments through its research programme on advanced communications, and will continue to do so."

However, he said a number of other issues still needed to be addressed, in particular concerns over "harmful and indecent content", data transmission security and encryption and the training of users, especially doctors and school teachers if tele-medicine or educational multimedia was to become a reality.

Most importantly, he said, the content available over the internet must be attractive, high quality and targeted to European needs. "Beyond these regulatory aspects, it is essential that the European industry aggressively invests in internet development and resolutely harnesses the internet for commercial purposes.

"Failing this Europe would experience a competitive disadvantage in a growing market," he warned.

Mr Bangemann also said the Commission was preparing an International Charter which it hopes would form the basis for an agreement with the US and other countries on internet regulation. However, he emphasised that "regulation for regulation's sake is not the answer. In fact our position is not that far away from the current US administration.

"I believe that a completely hands-off approach is not the best solution," he said. "But we should certainly limit our interventions as much as possible."

Editorial Comment, Page 13

Brussels presses Ireland to impose water charges

By John Murray Brown in Dublin

The European Commission is pressing Ireland to fall into line with other European Union member states by introducing domestic water charges, indicating that otherwise future aid from Brussels may be cut.

Jean-François Verstrynge, director of the EU's "cohesion fund" aid programme, warned this week that future support for environmental and transport infrastructure projects – worth I£1bn ($1.36bn) over the six years to 1999 – could be linked to changes in its water regime.

Ireland is the only EU state not to impose water charges. Under the last Fine Gael-led government, charges were not universally imposed, but were left to the discretion of local authorities, with the result that poorer rural municipalities paid, while consumers in larger urban councils such as Dublin and Limerick did not.

The Fianna Fail-led coalition is split on the issue. The free marketeers of the Progressive Democrats, though now a little coy, openly campaigned for water charges during the election.

Noel Dempsey, environment minister, said the government was unlikely to reintroduce water charges "because of their political history". But Mr Verstrynge said without water charges, it would be difficult to mobilise private capital to finance infrastructure once the EU funds dry up.

With the economy growing at 7 per cent annually for the last five years, economists are concerned about water shortages. "It's difficult in Ireland for people to realise water is a valuable resource. But with the rise in income, with people installing jacuzzis and power showers, water use is set to skyrocket," said Sue Scott of Dublin's Economic and Social Research Institute.

An ESRI report last year calculated even when water charges were in place, there was only a 54 per cent rate of cost recovery for water supply – 8 per cent for waste water used in sewage systems.

The Commission is preparing a new directive enshrining the "polluter pays" principle.

Greek consensus emerges over euro

By Kerin Hope in Athens

A consensus is emerging between moderates in Greece's Socialist government and conservatives, including business leaders, who back the government's drive for membership of European economic and monetary union and its currency, the euro, by 2001.

However, Costas Simitis, the reformist prime minister, is facing opposition from leftwing members of parliament and a confrontation with farmers.

Yesterday, parliament approved legislation to reduce deficits at public enterprises, despite defections by hardline Socialist deputies. Ten Socialists, including former ministers with close links to public-sector trade unions, boycotted the debate, although it was billed by party officials as a vote of confidence in the government.

Union opposition has slowed efforts to modernise management at state-controlled utilities and loss-making transport companies which rely on subsidies.

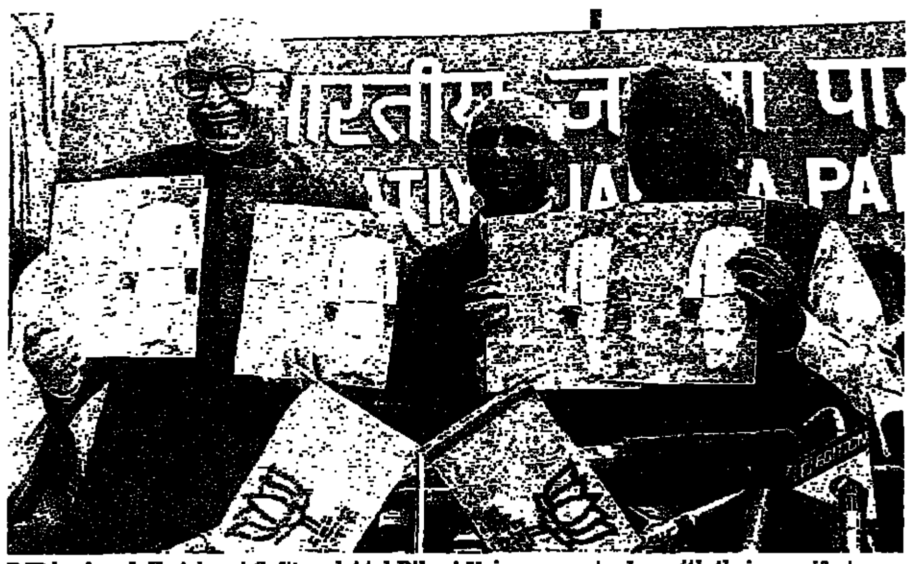
The legislation allows public sector managers to cut payroll costs by reducing benefits and overtime and transferring employees without approval from the unions. Prices on the Athens stock market jumped 2.39 per cent yesterday, led by shares of public-sector banks and OTE, the state-controlled telecoms operator, which have made a start on restructuring.

Several prominent deputies from the centre-right New Democracy party, the main opposition, abstained from voting to show support for Mr Simitis's campaign to modernise Greece's state-controlled utilities and transport companies.

Such support is also likely to assist Mr Simitis in the confrontation with farmers, who are protesting against the withdrawal of subsidies from the Greek government and the European Union.

BJP pledges curbs on foreign investors

By Mark Nicholson in New Delhi



BJP leaders L.K. Advani (left) and Atal Bihari Vajpayee yesterday with their manifesto AP

India's Bharatiya Janata party, the country's biggest, yesterday pledged to put "India first" in a strongly nationalist election manifesto which foresees only a "small role" for foreign investment.

The manifesto says a BJP government would frame rules to "restrict" direct foreign investment in "non-priority" sectors and to discourage foreign takeovers or 100 per cent ownership of Indian subsidiaries by foreign companies.

The 55-page document criticises seven years of economic liberalisation begun by the former Congress party government in 1991 as "a period of record loot under which foreign companies flourished and Indian ones foundered" and which resulted in "economic stagnation".

The manifesto commits a future BJP government to "rapid, large-scale internal liberalisation". But it says the BJP would "calibrate" the process of India's globalisation "so that Indian industry gets a period of seven to 10 years for substantial integration with the global economy".

Opinion polls show the Hindu revivalist BJP, in alliance with at least seven smaller regional parties, is likely to emerge as the largest grouping after this month's general elections, though it may fall short of a governing majority in the 543-seat parliament. The BJP has said it would negotiate a "common minimum programme" with its allies if they formed a coalition government.

The manifesto promises that a BJP government would pursue India's national interests "more vigorously" and to "make an impact on the world arena". The BJP also promises to "exercise the option to induct nuclear weapons". However, L.K Advani, party president, would not be drawn on whether a BJP government would conduct a nuclear test – a move which would automatically incur US sanctions. India currently admits it has nuclear capacity but says it has no intention of building a weapon.

Nationalist themes also dominate economic policy, which the manifesto says "will be guided by *swadeshi* or economic nationalism".

In the light of India's economic stagnation and Asia's recent financial crisis, the BJP says it would "appraise and review" the Congress party reforms.

It specifically criticises "misguided tariff reductions" since the reforms began in 1991. The manifesto says current economic conditions "will cause irreparable damage to the fabric of Indian industry," pledging particularly to protect small industries.

"Internal" liberalisation and faster economic growth would be encouraged by substantial further liberalisation in agriculture, greater government spending on infrastructure and considerable "pruning" of the public sector.

However, the manifesto says foreign investment would be encouraged in areas such as infrastructure and industries aimed at exports rather than the domestic market, but "not in areas where the domestic industry is performing well". Mr Advani declined to specify which industries this included. "We'll have to spell that out later," he said, though he added that the BJP would not take any action against existing foreign investments.

Takeovers of Indian companies "will not be encouraged," it says, adding that foreign direct investment is "welcome in non-predatory role in joint ventures rather than 100 per cent subsidiaries".

The manifesto says specifically that the BJP would ensure that ownership of the media "is in the hands of natural born Indians only" and limit to 20 per cent any foreign stake in media enterprises.

Jaswant Singh, chairman of the manifesto committee, also said that while India's state-monopoly insurance industry would be privatised, opportunities would be open only to Indian entrepreneurs.

The BJP also says it will build a "magnificent" Hindu temple at the site in Ayodhya where Hindu zealots in 1992 ransacked the Babri Masjid mosque. Two thousand people died in subsequent Hindu-Moslem riots.

It also wants to remove constitutional provisions according "special status" to the troubled and Moslem-majority state of Jammu & Kashmir. And it wants India to end its ambiguous nuclear posture and become a declared nuclear state.

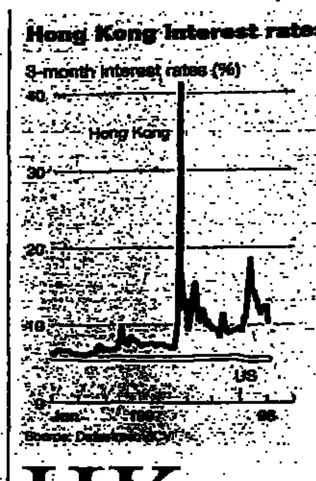
Each of these policies has been opposed by one or other of the seven smaller regional parties with which the BJP has aligned. "We will see to it that the rights of minorities and others will be protected," says J.Jayalalitha, leader of the AIADMK party, which allied with the BJP in the southern state of Tamil Nadu. The BJP has agreed to this. "When we form an alliance, we will have to have a programme tailored to the wishes of all," said Mr Singh.

The party says it would not "compromise" on its *Hindutva* agenda, but it has nevertheless soft-pedalled these policies during the campaign.

Its chief thrust has been to portray itself as the sole party capable of offering strong and stable governance after 18 months of fragile coalition rule.

India's strongest proponents of wider opening of its economy now lie outside the BJP and its fold. Such proponents include the Congress party, whose manifesto is more liberal on trade and foreign investment policy than that of the BJP.

However, this choice may have little direct bearing on the outcome of the poll. The majority of India's 600m voters who live in rural areas. Reform of investment policy will carry little currency in the villages where concern continues to focus on food and fuel prices.



HK ponders options to insure $ peg

Pressure on the currency has led to a debate about cheaper alternatives to hedging

Hong Kong companies can buy insurance for everything from fires to fraud. So why not insure against the risk that the currency peg to the US dollar, the linchpin of the financial system, will have to be abandoned?

One scheme under scrutiny is the idea of "put options" on the Hong Kong dollar – simply stated, the right to sell Hong Kong dollars to the financial authorities at a fixed rate at a specified time.

The aim would be to substitute a government currency guarantee for the high interest rates which currently defend the peg but at high economic cost.

Backed by Hong Kong economists at the University of Science and Technology and by Merton Miller, the Nobel prize-winning economist from the University of Chicago Graduate School of Business, the notion is more than academic. The idea has found its way into a list of proposals under consideration by Donald Tsang, financial secretary, as he considers ways to ease the pain of the peg.

The suggestion has won enthusiasm from many businessmen and bankers. "I thought the idea was excellent and we should definitely explore it," says Barry Cheung, chief executive of Fortune Oil. "We have seen two rises in bank prime lending rates since October and money market rates have been at double-digit levels most of this year," says the finance director of one blue chip. "We have to find ways to ease the pressure."

The introduction of government-backed put options could do that by implementing an official guarantee, say its supporters. That would remove the speculative risk against the currency, they add, allowing interest rates to fall.

Most in the corporate sector believe the government is determined and able to defend the existing peg rate of HK$7.80 to the US dollar. But the new scheme could also substantially reduce the corporate cost of insuring against devaluation through traditional hedging mechanisms in the market.

"Hedging is very expensive at the moment because the counterparty is factoring in the risk and probability of devaluation," said Mr Cheung. "The effective rate is more than HK$8.00 to the US dollar," he added.

The point of the proposed scheme would be to charge only a small premium, to cover administration charges, hence underlining the government's commitment to the existing rate. "Put options at the peg rate would demonstrate the government's confidence and commitment," says one Hong Kong banker.

Not all are convinced by the merits of the scheme, while many point to caveats. Jan Lee, senior economist at Hongkong Bank, says a stable financial environment is needed to launch the initiative and enable the pricing of put options. "You need interbank rates to fall below prime rates and to converge with US rates," he says.

While the announcement of a guarantee scheme could help provide the required stability, and pricing could be determined simply by supply and demand for insurance, others point to broader concerns. High interest rates are painful, but they force the adjustment in asset prices required to maintain Hong Kong's competitiveness in a devalued region, say economists.

Nicholas Kwan, regional chief economist at Merrill Lynch, describes the proposal as a two-edged sword. Against the positive confidence factor, he notes the scheme will tie up the foreign exchange reserves which now support the existing currency board exchange rate system. "The more you commit to this type of insurance programme, the less is left as free reserves," he says.

None of these counter arguments appears conclusive. Stubbornly high interest rates reflect speculative risks relating to continued regional upheaval as much as a mechanism for forcing adjustment in Hong Kong's costs. "We would have adjustment in the economy without such high rates," says Ma Guonan, co-head of economic research at Salomon Smith Barney.

As for the funding costs, Mr Kwan points out that with foreign exchange reserves of US$93bn, almost eight times the value of currency in circulation, there is scope at least for a trial programme. That, and the prospect of sustained high interest rates, rising unemployment and a sharp fall in growth, may prove tempting for Mr Tsang.

John Ridding

NEWS DIGEST

Indonesians riot as prices soar

Rising inflation sparked riots in the Indonesian city of Malang yesterday, signalling a rapid spread of anger over the sudden economic downturn in Indonesia. Residents of the East Java city, which is home to thousands of students and some of Indonesia's most fervent Moslem groups, said protesters pelted shops selling kerosene, used by the poor and middle class to fuel stoves, after prices more than doubled in recent days.

There were no reports of casualties or arrests but students were planning another demonstration today. Soldiers moved in to restore order after similar price rises have sparked riots in Ujung Pandang, capital of southern Sulawesi, and other small towns in Sulawesi and Java in recent days.

President Suharto has promised to lift subsidies on kerosene, which is imported and became drastically more expensive as the rupiah collapsed, on April 1.

The Moslem Eid holiday last week passed more calmly than many had expected but there is widespread concern that unrest could spread as workers and students return from their villages. More than 2m Indonesians have lost their jobs in recent months. *Sander Thoenes, Jakarta*

■ MALAYSIA

Worker repatriation cancelled

Malaysia yesterday told the World Bank it would not repatriate Indonesian workers in order not to make the situation in Indonesia worse.

The World Bank president, James Wolfensohn, said that Mahathir Mohamad, Malaysian prime minister, told him during talks yesterday the government would try to find the workers alternative work in Malaysia. Mr Wolfensohn said the World Bank was particularly concerned about the affects of the economic crisis on people.

There are about 2m foreign workers in Malaysia, half of whom come from Indonesia. The Malaysian government earlier proposed sending back 1m workers because of the economic slowdown. The International Labour Organisation warned in a recent report of immense social upheaval in the wake of the Asian financial crisis and its impact on jobs. *Kyodo, Kuala Lumpur*

■ THAILAND UNREST

Farmers threaten big protest

Thai farmers demonstrated yesterday in the country's poor north-east, threatening to bring 30,000 protesters to the capital if the government did not come up with a clear-cut development policy by the end of the month. About 3,000 farmers gathered in Nakorn Ratchasima province, 210 kmnorth-east of Bangkok, demanding accountability from the government over the country's economic crisis. Thailand's devaluation in July provoked the regional financial crisis which has forced several countries including Thailand to appeal to the International Monetary Fund for help.

The farmers are demanding that the government reveal all the conditions attached to the IMF loan. They also called for a freeze on the petrol tax and suggested that the government offset revenue shortfalls by imposing heavy taxes on inheritance and unexploited land. Farmers and workers organisations have complained the government has spent too much attention on solving macroeconomic problems, while ignoring the grievances of the country's poor. *AP, Bangkok*

■ AUSTRALIA

Fears for commodity exports

Dwindling Asian demand and weakening of commodity prices have raised great concerns about Australia's export-orientated economy. At an annual gathering, leading economists and commodity producers in Canberra yesterday heard forecasts that Australia's commodity export growth rate would fall by more than two-thirds in the fiscal year to June 1999.

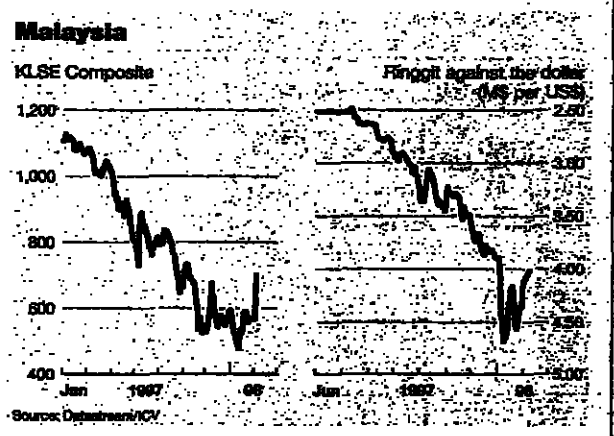
John Anderson, Australian minister for primary industries and energy, assured the government's Australian Bureau of Agricultural and Resource Economics (ABARE) that the government's economic policies had "positioned the country well" to weather difficulties generated by the Asian meltdown. But executives and analysts across a wide range of industries, from wheat and meat to iron ore, coal and nickel, adopted "the Asian crisis" as their mantra.

"This year, the economic outlook is one of the most uncertain we have faced in the past decade," said Brian Fisher, ABARE executive director.

"The recent crisis in Asian financial markets has generated more uncertainty for the commodity sector than we've experienced since the collapse of the Soviet Union." *Gwen Robinson, Canberra*

Investors pour into Malaysia

By Sheila McNulty in Kuala Lumpur



Investors poured into Malaysia's stock market yesterday, pushing the key index up 23 per cent in what analysts suspect might signal the start of a fitful but sure recovery.

The benchmark Composite Index closed at 701.31, up 131.80 points higher than on January 26. It had been closed for five trading days for holidays marking the end of Ramadan.

The pent-up eagerness to get in on the action sparked hectic buying. While unsustainable at this pace, it could indicate that investors are coming to terms with the region's financial crisis.

Although corporate restructurings and failures, bank mergers and layoffs are expected in the months ahead, analysts said investors are ready for them. Barring the outbreak of war in Iraq or widespread unrest in Indonesia, analysts said the market might be embarking on the long, volatile road to recovery. "Quite likely we've seen the bottom," said Sani Hamid, emerging markets analyst at MMS International/Standard & Poor's. "What else is there to discount?"

Though Malaysia has not sought International Monetary Fund assistance, it has begun to take tough measures to reign in its economy, including the deferral of some prestigious infrastructure projects. Yesterday's market move indicated it too stands to benefit from the renewed confidence in countries ready to take measures to deal with the crisis.

But dealers said they were taken aback by the speed of the movement, with some adding that such violent swings in illiquid markets were a deterrent to institutional investors who like to deal in sizeable amounts.

Yet the higher level of the stock market raised new hopes of a virtuous circle in which cash-strapped companies would again be able to raise funds and local investors with money tied up for months in paper losses would recover enough to pay off mounting debts. This would reduce pressure on financial institutions and revive economic growth.

As foreign investors buy ringgit to purchase shares, they would in effect support the Malaysian currency. Its 48 per cent fall against the US dollar since July has made servicing foreign debt and imports more expensive.

Stock markets, Page 34

Smaller investors benefit from NZ$267m out of court accord

NZ settles steel sell-off case

By Terry Hall in Wellington

The New Zealand government has agreed to pay NZ$267.5m ($156m) in an out of court settlement to thousands of mainly small investors in the banking group Equiticorp Holdings. The action resolves an eight-year dispute over the way treasury advisers handled the sale of New Zealand Steel.

The settlement is the largest in the country's commercial history and was agreed with Equiticorp's government-appointed statutory managers. The settlement means the government will not proceed with its plans to take the case to appeal, or the Privy Council in London.

The statutory managers were appointed after the worldwide collapse of the Equiticorp group of companies. The case was brought by Fred Watson, one of the statutory managers, on the grounds that the government or its advisers acted illegally in 1987 when they agreed to accept an offer of NZ$327m from Equiticorp to buy the state owned-steel mill. The mill had recently been expanded at a cost of NZ$2bn.

The statutory managers alleged the government knew Equiticorp was funding the purchase through its own shares, in breach of the Companies Act.

In July 1996 Justice Smellie, after a six-month trial, found the government was liable to pay the statutory managers NZ$190m, plus interest, a total bill of NZ$328m.

Professor Don Trow, chairman of the advisory committee for the statutory managers, paid tribute to the former justice minister, Sir Geoffrey Palmer, for setting up the statutory management after the collapse of the Equiticorp group of companies.

He said the result was a triumph for Mr Watson and his associates, and represented a far greater realisation than would have occurred had a normal receivership been put in place. "A normal receivership structure would never have discovered the problems," Prof Trow said.

Ironically, Sir Geoffrey – later Labour prime minister – set up the management regime that eventually unravelled the legal complexities involved in the case which led to the government payment of what will be the largest legal settlement in New Zealand.

Winston Peters, the treasurer, said the settlement saved the government any further increase in its interest bill, which was running at NZ$8m a month, and was an acknowledgement that the risks of pursuing the case were high.

The government had set aside NZ$382m as a contingent liability over the case, and the settlement, for any lesser sum, would have a positive impact on this year's budget.

Harbin puts heating costs on consumer

The annual Harbin Ice and Snow Festival is a celebration of the cold. And Harbin, capital of Heilongjiang Province on China's border with Russia, has much to celebrate: at night, the temperature in winter typically falls below -30C.

This provides a perfect habitat for the frozen winter sculptures, a festival of kitsch carvings in ice, backlit by bright neon tubes. But the climate also makes the government's provision of heating, and the gradual transfer of heating costs from the state to the citizen, the most sensitive social issue in Harbin.

"This is even more important to people than the problem of unemployment," says Zhao Qingli, a senior official in the Harbin government – quite an admission when the municipal government privately acknowledges the jobless rate is over 10 per cent, more than double the official national rate of 4 per cent.

State enterprises have in the past been responsible for heating not only their factories but the housing they provide for their workers. The total Yn500m ($60.4m) cost of keeping the people of Harbin warm each year was shouldered substantially by state industry; only a portion came directly out of the government budget.

However, the north of China, where state-owned heavy industry – machine tools, defence and civil engineering factories – prospered in the era of central planning, has suffered most heavily in transition to a market economy. Mr Zhao says 20 per cent of state companies have not paid their workers full salaries and benefits for over a year, providing instead meagre subsistence pay.

"In the past, heating was part of welfare provided by the work unit. But with the changes in the national economy, that has had to change. We have tried to push the business of heating supply towards the market economy," explains Mr Zhao. That means charging individuals for heating.

The Harbin government, China's first municipal authority to introduce direct heating charges, has started modestly: the state still shoulders 90 per cent of the cost, issuing heating fees to cover the remaining 10 per cent.

To soften the blow and avoid any public protest about the controversial new charges, the government has also started providing new subsidies to Harbin citizens to cover heating costs. Government assistance more than covers the individual charges for heating, but officials say the subsidies are intended to help remould public assumptions.

> Other welfare charges may be gradually foisted upon Chinese citizens and the private sector

"In the future, ideally, we will transfer heating costs from state welfare to the market. Heating should be a commodity and, if you want it, you have to pay for it," says Mr Zhao. But, he explains, "we are using the subsidies to help change the way people think". The subsidies are also a means by which the state can augment the meagre incomes of many state-sector employees.

Pressure for a more market-oriented approach has also come from heating suppliers that have found it increasingly difficult to get paid by all-but-bankrupt state companies. Wang Wenbin, head of the city's heating supply bureau, says companies have introduced new teams to collect heating fees and started using "punitive measures" to enforce payment.

Mr Zhao says Harbin is China's "first city to start charging for heating costs", a response to the declining capacity of the nation's state-owned enterprises to shoulder the costly burden of heating homes.

As China's transition to a freer market continues, more and more state companies are expected to close, lumbering the government with the bill for the welfare – health, school, pensions and housing – that state industry has provided for millions of workers and their families for more than a generation.

National fiscal revenues are already inadequate to cover China's expanding spending needs, making it likely that just as Harbin has been compelled to farm its heating problem gingerly out to the market, so other welfare charges may gradually be foisted on Chinese citizens and the private sector.

The watchword, says Mr Zhao, is gradual change. The transfer of costs is essential, but the government must take into account the social strains of China's economic transition for the thousands of state workers who have lost jobs and the thousands more facing redundancy.

"We will continue to transfer the heating costs to the people, but only as far as their living standards can take it," he adds.

James Harding

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The Iraq crisis: □ Arab states cool on military action □ Baghdad doubts on oil sales plan □ Envoy questions US sincerity

Arabs lukewarm on Albright's call for air strikes

By Mark Huband in Cairo

US efforts to secure Arab backing for possible air strikes against Iraq seemed yesterday to have won only a lukewarm response from the region, whose leaders are insisting on greater diplomatic efforts to defuse the crisis.

President Hosni Mubarak of Egypt appeared yesterday to have maintained his strong objection to military action during a 55 minute meeting in Cairo with Madeleine Albright, US secretary of state, at the end of her Middle East tour.

Amr Moussa, Egypt's foreign minister, said after the meeting: "We are not talking about anything except how to fulfil the [UN] Security Council resolutions, as well as giving full support to the current diplomatic efforts."

Earlier, however, Mrs Albright told a news conference: "Today I can report to you that the United States, Egypt, Jordan, Kuwait, Saudi Arabia, Bahrain and the Palestinian Authority are of one mind on this crisis caused by Iraq's defiance of the Security Council."

Her remarks came as Kofi Annan, UN secretary general, spoke on the telephone to Tariq Aziz, Iraq's deputy prime minister, and Bertrand Dufourcq, French special envoy, arrived in Baghdad as part of international efforts to get Iraq to back down and allow the UN to resume weapons inspections.

Although opposed to air strikes, the Arab states have been insisting that Iraq comply with UN resolutions to allow inspectors unhindered access to suspected sites where chemical and biological weapons may be hidden.

Mr Mubarak has attempted to co-ordinate a unified Arab position, contacting 14 regional heads of state and government by telephone on Monday. The discussions led to an Arab League initiative to press Iraq into abiding by UN resolutions. Esmat Abdel-Meguid, Arab League secretary general, will arrive in Baghdad with the proposals today.

"The picture that we see now is worrying and disturbing, and reflects a solitary stance by America, because not the whole [UN] Security Council agrees with this strike," Mr Abdel-Meguid said. "[Proposals for air strikes] are rejected by Arabs in form and content."

The only Arab support for air strikes has come from the Gulf, but even there, only Kuwait has so far given unequivocal public backing in response to Mrs Albright's canvassing. The US maintains 1,500 troops permanently in Kuwait, and a further 2,000 may be airlifted as reinforcements. Qatar, where the US has two large arms depots, is assumed by Washington to favour military action, but has yet to be asked.

After meeting the secretary of state on Monday, Crown Prince Abdullah of Saudi Arabia was reported by Mrs Albright as saying the US and Saudis "see eye to eye on the issues involved".

A Saudi statement after the meeting said: "The two sides asserted their interest in exhausting all diplomatic means to resolve the current crisis, as the failure of such methods would entail grave consequences whose responsibility would lie exclusively on the Iraqi regime."

US officials interpreted the statement as support for air strikes. However, there is no sign that Saudi Arabia has approved the use of US fighter bombers stationed on its territory for use in patrols over Iraq's southern no-fly zone. William Cohen, US defence secretary, will visit the Gulf states on Sunday if the likelihood of air strikes grows.

The US now has 25,000 troops stationed in the Gulf. A third aircraft carrier will join the US fleet in the Persian Gulf on Thursday, while British Harrier jump jets are due to join UK vessels in the Mediterranean.

Arab wariness of initiatives which undermine Arab unity is strong, despite regional suspicion of President Saddam Hussein's regime. Key to this change has been the failure to break the deadlock in the Israeli-Palestinian conflict.

The region's current priority is to forge unity in the face of Israel's refusal to abide by agreements to carry out two further troop withdrawals from the West Bank. President Mubarak is keen to prevent Iraq becoming a catalyst for Arab disunity. Arab concern over Israel's nuclear arsenal is greater than concern over Iraq's chemical weapons stockpiles.

Madeleine Albright in Bahrain yesterday: she claims US, Saudis and Egypt 'are of one mind' on Iraq action Reuters

Russian deputies speak up for Iraq

By Chrystia Freeland in Moscow

Russia's parliament yesterday urged the Kremlin to break United Nations sanctions against Iraq if the US launches military strikes without UN approval.

The bellicose resolution reflects the Russian establishment's traditional sympathies for Iraq and its increasing frustration with America's emergence as a global policeman.

However, the decision by the Duma, the lower house of the Russian parliament, was passed only in its first reading. Even if it were to receive final legislative approval, it would not be binding on President Boris Yeltsin, who has final authority over foreign policy issues.

The Duma also urged Mr Yeltsin to use his Security Council veto if Washington were to request UN support for its actions against Iraq.

Gennady Selezniev, the Communist speaker of parliament, normally considered a moderate, struck a particularly incendiary note when he claimed Washington had pushed the world to the brink of a nuclear holocaust.

"We are talking about possible nuclear war here, maybe global," Mr Selezniev said. "Even if it is a US propaganda move, we have a direct threat of nuclear strike in one single country. This has to be stopped."

The Duma, dominated by Communists and the ultranationalist party of Vladimir Zhirinovsky, generally takes a much harder line than the government or the cabinet on foreign policy issues.

It is particularly exercised about any signs of Russia's decline from its Soviet-era status as a super-power and remains attached to Moscow's former cold war allies, such as Iraq.

Yevgeny Primakov, the foreign minister, warned deputies that their resolution had no legal weight. But while the Kremlin and the foreign ministry are expected to attack the parliament's vote, it highlights Russia's growing unease over US policy in the Middle East and its own increasing insignificance in international diplomacy.

The Iraqi situation has also underscored the complications in Russia's relations with the US.

On one hand, Russia remains highly dependent on, and careful to maintain, its good links with Washington. US support for Russia's wrenching market reforms has been crucial, particularly in helping to secure huge loans from the International Monetary Fund.

But on the other hand, as Russia begins to stabilise after the chaotic collapse of communism, it has become increasingly conscious of its invisibility in global diplomacy.

US to back UN plan to raise food-for-oil targets

By Robert Corzine

The US is expected to support steps to rehabilitate parts of Iraq's oil industry if the United Nations determines this is needed to reach proposed new financial targets for the oil-for-food programme.

Officials say Washington intends to study carefully the proposal by Kofi Annan, UN secretary general, to raise Iraq's oil sales revenue target to $5.2bn every six months from the present $2bn. However the "US disposition is to support the secretary general's plan", said one official.

Such support would extend to allowing new investment in Iraq's oil infrastructure, as long as there was a clear need and it was done under close UN supervision. In the past the US has objected to suggestions that Iraq should be able to use oil revenues to revitalise its petroleum sector.

There is considerable uncertainty about the capability of Iraq's oil industry to expand output to the higher level needed to meet the new UN target.

Industry analysts say Iraqi exports may have to rise from about 1m barrels a day to between 1.8m b/d and 2.4m b/d barrels a day, depending on prevailing world oil prices.

The Centre for Global Energy Studies in London estimates Iraq's maximum production capacity at 2.3m b/d, although Leo Drollas, the centre's director, said it probably take only four or five months to clear the production and export bottlenecks if money was made available to refurbish pipelines, storage facilities and specialised processing equipment.

But diplomats say it could also take "some months" to work out details of the scheme. "It took 18 months for Iraq to accept the resolution 986" authorising the original oil-for-food plan, noted one diplomat. "Who knows how long this might take."

Iraq's initial reaction to the proposal was decidedly cool. Officials yesterday attacked the idea, calling it an American and British plot "aimed at stealing more than 50 per cent of Iraq's oil resources".

Denis Halliday, the UN's humanitarian aid co-ordinator in Baghdad, said he was confident that an agreement could be reached. "I hope that working together with United Nations in New York and here we will work out a compromise which will reflect the recommendations of the secretary-general," he said.

But western diplomats concede that adoption of the new target would mark a dramatic expansion of direct UN involvement in the country's economy. One said it would be tantamount to the creation of a UN mandate in Iraq.

Potential Iraqi exports

Based on	Iraqi permitted exports \$bn per 6 mths	Price of Kirkuk Crude[1] \$	Price of Basrah Light \$	Av. price of Iraqi crude[2] \$	No of barrels (m) per 6 months	No of barrels (m) per day
\$18 per barrel dated Brent	5.2	16.4	15.5	[illegible]	[illegible]	[illegible]
\$14 per barrel dated Brent	5.2	12.4	11.5	11.95	435	2.384

1. Based on MEES forecast Feb. discount to Brent 2. Based on mid-Jan volumes of Kirkuk and Basrah Light Source: Société Générale

Under the oil-for-food programme, about one-third of revenues from oil sales is set aside for Gulf War reparations and offsetting the cost of UN operations in the country, including the work of the international arms inspectors. The latest proposal would increase the value of Iraq's humanitarian purchases to $3.5bn every six months from $1.3bn, although there would also be a substantial increase in the amount of money available for reparations and costs.

Diplomats are also discussing whether part of the increased revenues could be used to pay off some of Iraq's debts.

Israeli leaders try to calm gas mask frenzy

By Judy Dempsey in Jerusalem

Benjamin Netanyahu, the Israeli prime minister, yesterday allocated $68m to boost medical and civil defence in case of an Iraqi missile attack.

The emergency financing followed days of panic by Israelis who rushed to gas mask centres, inquired about protection against chemical and biological weapons, and checked their sealed rooms or shelters.

Many recalled the 1991 Gulf war attacks when Iraq fired 39 Scud missiles at Israel.

Mr Netanyahu, who at the weekend had adopted a strident tone, warning Iraq that Israel was prepared for any attack, yesterday toned down his language. "We assess that the chance of an attack by Iraq against Israel is extremely small," he said. Israel Radio said officials were now administering to the public "a multiple dose of tranquillisers" to stop the panic.

Ilan Biran, director-general of the defence ministry, said intelligence assessments concluded that chances of an Iraqi attack were "extremely low".

Silvan Shalom, deputy defence minister, said the situation now was "completely different from 1991 ... the number of missiles has been greatly reduced, as well as the number of launchers that were cut to a minimum, if they exist at all".

The lack of official reliable information and hysteria whipped up by the media was criticised by Joel Feldschuh, president of El Al, the national airlines, who was an intelligence officer during the Gulf war.

"We are drumming up this panic and we are digging the pit into which we will fall," said Mr Feldschuh, a retired airforce brigader-general. He feared the panic would discourage investors and tourists.

Tourist groups, he added, had begun to cancel after seeing broadcasts on CNN showing mayhem at gas mask distribution centres.

US determined to launch attack, says Iraqi envoy

By Roula Khalaf and Laura Silber at the UN in New York

Iraq's ambassador to the UN, Nizar Hamdoon, yesterday accused the US of making a show of diplomatic efforts to resolve the stand-off with the UN and said Washington was determined to launch a miliary strike.

"The talk of a diplomatic solution is only to prepare the ground, to strengthen their arguments and finish up military preparations," he said.

Mr Hamdoon stressed that room remained for a diplomatic solution to the crisis over access for UN weapons inspectors if there was a will to do so.

Although Baghdad on Monday denied reports that it had agreed to Russia's proposal to allow unrestricted access to eight presidential sites declared off limits to the UN, Mr Hamdoon said Russian and French moves to avert military action were "serious" and still under way.

"The best way of solving the crisis is through diplomacy and there could be a diplomatic solution. But the feeling in Baghdad is that Washington and London want military action."

Hamdoon: 'No one sees the silent bombarment' Popperfoto

Mr Hamdoon said that despite US claims of support in the Gulf Arab states for its policy, including possible military action, he was personally "pleased to hear the reluctance of the Saudis to allow the use of their territory for a military strike on Iraq". He also stressed that he was not convinced that France had softened its opposition to military action.

For the embattled Iraqi diplomat, the heart of the matter lies in what Iraq sees as American determination to leave sanctions, imposed after Iraq invaded Kuwait in August, 1990, in force until President Saddam Hussein is removed from office.

"If the US has this policy of no-lifting of sanctions, it leaves Iraq with no incentive, no hope and this overshadows Iraq's relations with Unscom," he said of the UN disarmament mission charged with dismantling Baghdad's weapons of mass destruction.

Mr Hamdoon said this policy was one of the main reasons why Iraq has been "dubious" about the oil-for-food programme designed to ease the plight of Iraqi citizens under seven years of crippling sanctions.

The Security Council this week will decide whether to approve a proposal to increase to $5.2bn from $2bn, the amount of oil Iraq is allowed to sell every 180 days to buy food and medicine. Baghdad on Monday initially dismissed the proposal as a ploy to keep sanctions in place.

But Mr Hamdoon said the official position was still under consideration.

Western diplomats know that the proposed increase alone will not compel Iraq to allow full access for UN inspectors, including suspected weapons sites.

Mr Hamdoon claimed that barring inspectors from eight presidential sites was a matter of national pride and not deceit. "What if they want to go into his (President Saddam's) bedroom, his bathroom, that's not acceptable," he said.

Iraq believes, he said, that the group of international experts currently meeting in Iraq to make a technical evaluation of Baghdad's progress in destroying its weapons capabilities was crucial for ending the stand-off. Iraq says that if access to presidential sites remains the only outstanding obstacle to lifting sanctions, it would consider allowing weapons inspectors in. The expert meetings however are not scheduled to be end before the end of the month.

"It all depends on what kind of damage they want to inflict," says Mr Hamdoon. "I don't personally think the bombing would result in even one per cent of human casualties that the sanctions have caused. The sanctions are the silent bombardment of Iraq but no one sees them on the television screens."


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NEWS: WORLD TRADE

Europe's machine tool makers forecast strong growth

By Peter Marsh

An upturn in factory investment across Europe plus strong demand from the US will boost machine tool production in western Europe this year, confounding expectations that the sector might be hit by the economic turmoil in south-east Asia.

According to internal estimates from Cecimo, the trade body for western Europe's machine tool industry, output will expand by 6-7 per cent this year, after growth of about 2 per cent last year.

Production from Germany and Italy – Europe's two most important countries for machine tool production – is likely to be particularly strong, with output expected to climb by 6 per cent and 8 per cent respectively.

Sales of machine tools by European-based companies total $16bn a year, or just under half world production. Machine tools are essential production systems for most areas of engineering, with about half of production used in the automotive and aerospace industries.

Europe's machine tool industry encompasses some 1,200 companies, mostly privately owned and employing fewer than 100 people.

Of other European countries, France and Spain are likely to see machine tool output climb 7 and 5 per cent respectively, according to the Cecimo estimates. Only Britain of the big machine tool building nations is expected to see a reduction in output.

In the UK, production is likely to fall 8 per cent, after a 2 per cent decline in 1997, because of the impact on exports of the strong pound, together with reduced domestic demand linked to a slowing economy.

Jean Heymans, Cecimo's director-general, said the figures indicated the industry was continuing its recovery from the early 1990s recession when employment in the industry fell sharply from about 200,000 to the current 150,000. Employment in the industry is expected this year to climb slightly.

"There are grounds for optimism about the next year, although we will continue to monitor the economic situation in Asia very carefully," he said.

Cecimo's estimates indicate that only about 5 per cent of machine tools made in western Europe are destined for south-east Asia, excluding Japan and China. These are the nations hardest hit in the recent economic crisis.

The worst that could happen, according to Cecimo's estimates, is that a reduction in Asian demand could cut western Europe's machine tool growth this year from a "best-case" figure of 7 per cent to just under 6 per cent. Cecimo has had no reports to date of Asian customers backing out of buying machines they had already ordered, according to Mr Heymans.

However, any slowing down in the pace of industrialisation in Asia could hit the machine tool sector in the future. Since machine tools are normally ordered some time after companies begin a factory investment process, the sector would be among the last to be affected by any such slump.

One factor that has helped the European machine tool industry has been a spate of investment in aerospace and car plants across the continent, including new projects in eastern Europe. Many companies have also moved into new, high-tech areas of machinery, involving precision handling systems or laser cutters, and this is helping the industry's growth, according to machine tool representatives.

However, Mr Heymans said that because so many of the companies in the industry were small, gaining finance, particularly for global expansion, could hold the industry back over the next few years.

Iberia signs $2.6bn deal with Airbus

By David White in Madrid

Airbus yesterday signed a preliminary $2.6bn deal to supply 76 aircraft to Iberia, its largest single European order.

The deal, to replace the Spanish state owned carrier's medium-haul fleet, was won after a tough eight-month contest with Boeing.

It means that the Iberia parent airline, due to be privatised by mid-1999, will eventually be using only Airbuses on its domestic and European routes. The bulk of its short and medium-haul fleet has up to now been made up of Boeing and McDonnell Douglas aircraft.

But Josep Piqué, Spanish industry minister, insisted that the choice had nothing to do with Spain's participation in the Airbus consortium in which the state-controlled aerospace manufacturer Casa holds a 4.2 per cent stake. Iberia had been given "absolute freedom" to choose its new aircraft, he said.

Jean Pierson, Airbus's outgoing managing director, described the negotiations as "very difficult".

The deal, said by Iberia to be Europe's biggest civil aircraft order for at least a decade, covers three versions of Airbus's narrow-bodied airliner, the A319, A320 and A321, with capacity ranging from 126 to 187 passengers. The airline already has 22 A320s.

A final contract, including the choice of engines, is expected to be signed in the spring, covering 50 firm orders and 26 options, for delivery up to 2004.

The aircraft are to replace Iberia's Boeing 727s, DC-9s, and old wide-bodied A300s, and to cater for growing demand.

Xabier de Irala, Iberia chairman, said a third of the aircraft would be bought outright with the remainder leased. The deal, valued at Pta400bn ($2.6bn), would mean the airline would be running fewer different kinds of aircraft, bringing savings in operating, maintenance and training costs. The three Airbus models share the same cabin and flight controls.

With Spain negotiating to bring in British Airways and American Airlines as minority shareholders in Iberia, the airline hoped virtually to double its pre-tax earnings this year to Pta35bn, after a seven-fold increase in 1997 to Pta18.4bn, he said.

In addition to the new Airbuses, Iberia would buy eight more Boeing 757s, completing a half-fulfilled contract which it signed in 1990. But it planned to phase the aircraft out of its fleet by the time the last of the Airbuses was delivered. At the same time it would transfer its current MD-87 aircraft to its domestic sister airline Aviaco, already operating the similar MD-88.

To cope with demand, Iberia recently reached an agreement to take 11 aircraft into its network from its Spanish rival Air Europa, complete with crews.

ECGD outlook clouded by Asia

By Michael Peel

Britain's Export Credits Guarantee Department enjoyed a record trading surplus last year but admitted that the Asian financial crisis had "clouded" its predictions.

The ECGD had global exposure – or potential liabilities – of £22.9bn ($38.2bn) at March 31 1997. China accounted for £2.35bn of exposure, Indonesia for £1.83bn and Hong Kong for £1.21bn.

Vivian Brown, chief executive, said the south-east Asian turbulence may have led to a greater recognition that risk insurance was a sensible thing to take out.

He said the ECGD had raised its insurance premiums for investments in several countries in the region, including Indonesia, by up to 10 per cent. "It's clearly a very uncertain and unpredictable position [in Asia].

"The risk of default must clearly have increased in a number of these countries, but so far there have been no claims on the ECGD."

Mr Brown said that more than 95 per cent of ECGD-insured south-east Asian investments were in publicly funded schemes. These were at less risk than corporate sector projects.

He said: "Even if there are claims we would expect the underlying strength of the economy to be such that we would eventually recover the money with interest."

However, many large public sector projects in the region had been delayed because of the crisis. They were likely to be postponed for quite some time.

It was possible that the number of large-scale overseas investment projects would fall worldwide.

Last year, the value of new schemes insured by ECGD fell by 36 per cent to £2.6bn, largely because of a decrease in the number of high value projects. The ECGD expected to win about £3bn of new business this year.

The EGCD was increasingly funding projects in areas outside Asia. It had invested in a number of oil and gas projects in Middle Eastern countries such as Qatar and Oman.

The ECGD, which is government funded, aims to operate on a break-even basis. It paid £446m of last year's £1.03bn trading surplus to the UK Exchequer.

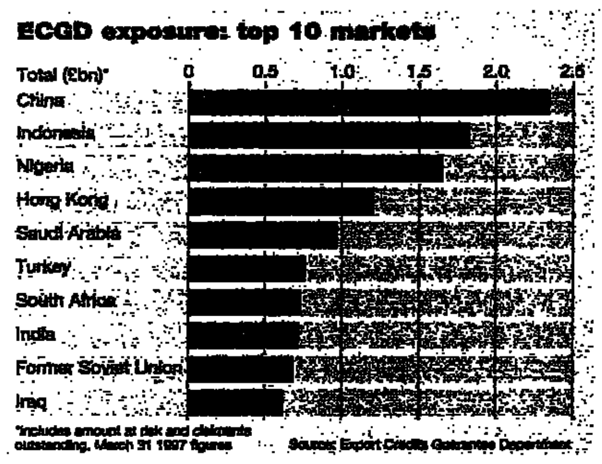
Tom Jaffray, resource management director, said the ECGD's surplus was modest compared with its potential liabilities.

"We are in a very strong position at the moment but we must be cautious about the future," he said.

● Germany will continue to guarantee export business with the Asian crisis countries at unchanged conditions, Günter Rexrodt, Bonn economics minister, said yesterday, Peter Norman writes. He said Germany's Hermes system of export credit guarantees had backed business totalling DM25bn ($14bn) to Indonesia, Thailand, the Philippines, Malaysia and South Korea. Because some of the credits had been paid back, Bonn's maximum exposure to risk was DM17bn, of which only DM2.5bn fell due this year and DM2bn in 1999.

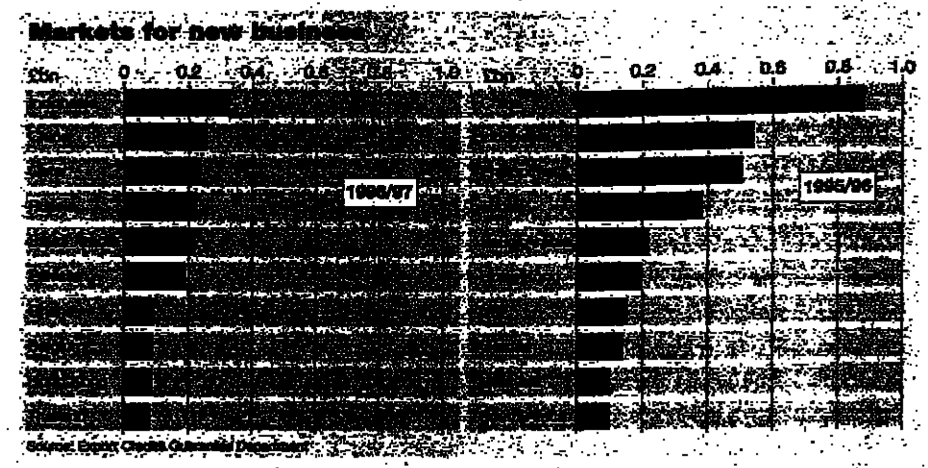
Mr Rexrodt said Hermes had suffered no losses from the Asian crisis and that continued cover showed Bonn's faith in the countries' ability to restructure their economies.

ECGD exposure: top 10 markets



*Includes amount at risk and claims outstanding, March 31 1997 figures
Source: Export Credits Guarantee Department

Markets for new business



Source: Export Credits Guarantee Department

Caribbean anger at nuclear cargo

By Canute James in Kingston

Caribbean governments have warned that the passage through the region this week of a ship carrying nuclear waste from Europe to Japan is a danger to the area.

But the British and French companies shipping the waste contend that it is safe, and that there were no problems with earlier shipments.

The Pacific Swan, a UK-flag vessel built specifically to carry nuclear waste, is passing through the Panama Canal after leaving Cherbourg, France, 10 days ago, with a cargo of vitrified nuclear waste.

British Nuclear Fuels and Cogema of France, the *companies making the* shipment, said the waste had been packed to meet safety standards set by the International Atomic Energy Agency, and the French and Japanese governments.

Prime ministers of several eastern Caribbean countries said recently they were opposed to the shipment of the waste through the region, as an accident could hit tourism, fishing and commercial shipping industries.

The shipment has also been attacked by Greenpeace, the environmental lobby, which has questioned its safety.

Ralph Maraj, Trinidad and Tobago's foreign minister, said: "With our Caribbean neighbours, we have made our position consistently clear and continue to call on those responsible for this dangerous practice to be sensitive to the concerns of the peoples of the Caribbean.

"We will continue to object strongly to the use of the Caribbean Sea as a transshipment route."

The Pacific Swan had carried nuclear waste through the Panama Canal 28 times in the past, British Nuclear Fuels said, in rejecting the criticism. Over 4,000 special casks containing nuclear fuel had been safely transported between Japan and Europe since the 1960s in over 160 shipments, the company added.

Pacific Nuclear Transport, which operates the Pacific Swan, was "the most experienced company in the world for transporting this type of cargo, having covered 4.5m miles without a single incident resulting in the release of radioactivity," said British Nuclear Fuels.

ILO warns of global rise in child labour

By Michael Peel

The world has a quarter of a billion child workers and their numbers are set to rise, according to an International Labour Office report released yesterday.

The problem is particularly severe in Africa, where the ILO says the number of child labourers could increase by a quarter to 100m by 2015.

The report was prepared for a conference on child labour which starts tomorrow in Kampala, Uganda. The three-day meeting, organised jointly by the ILO and the Organisation of African Unity, will aim to develop a strategy to help children out of exploitation and into education.

Michele Jankanish, senior legal officer for the ILO, said the report revealed that previous research based on household surveys had underestimated the number of child workers. "One of the problems of child labour has been the lack of reliable statistics," she said.

"If a child was going to school and working they would be counted as going to school. Also activities like girls doing housework would not be counted as work."

The ILO estimates that at least 120m young people worldwide aged between five and 14 work full-time. Another 130m children do significant amounts of work in addition to going to school.

The report estimates that 41.4 per cent of African children aged between five and 14 are economically active, compared with 21.1 per cent in Asia, 16.5 per cent in Latin America and the Caribbean and 10.4 per cent in the Pacific region.

The ILO's work suggests that just under three-quarters of child labourers work in agriculture, hunting, forestry and fishing.

"Much of child labour is hidden," said Ms Jankanish. "They are spread out in rural areas, small workshops, private enterprises and domestic service."

The ILO found that poverty was the primary reason why African children worked. Children typically contributed between 20 and 25 per cent of the family income.

Ms Jankanish said that countries which had experienced high levels of economic growth had not seen any reduction in the number of child workers.

Ms Jankanish said it was essential that African countries addressed the issue of child labour before they industrialised. Many child labourers in Asia and Latin America were young people who had moved to newly urbanised areas where they no longer enjoyed the protection of their families.

Percentage of children aged 5 to 14 working*

	Both sexes	Boys	Girls
World	24.7	27.0	22.3
Africa	41.4	44.8	36.7
Asia	21.1	22.0	20.0
Latin America**	16.5	46.0	11.0
Pacific	10.4	21.8	9.2

Source: ILO

*Includes domestic work
**Includes Caribbean

NEWS: THE AMERICAS

One man shows he is in charge of the internet, but Washington plans reforms

Master of the domains set to lose power

By Louise Kehoe in San Francisco

For the past few days, the answer to the question "Who is in charge of the internet?" has been quite clear and a matter of mounting consternation in Washington.

Jon Postel, a bearded, pony-tail-wearing computer scientist in southern California and one of the original engineers of the internet, is – at least for now – ruler of the internet.

For some days, he has been conducting a "test" in which he has been redirecting crucial "look up" messages that would normally go to the central directory of all website addresses – maintained by Network Solutions on behalf of the US National Science Foundation.

Some of these messages – which make it possible for web users to type in names such as *www.ft.com* and arrive at their chosen web pages – are now taking a different route. They are going to a computer system Mr Postel maintains at the Information Sciences Institute at the University of Southern California.

There, Mr Postel is in charge of the Internet Assigned Numbers Authority, which he runs on behalf of the Defence Department. It co-ordinates the allocation of numerical addresses for the internet worldwide – a role that gives him god-like control over the internet address system.

When the internet was primarily a communications system for university researchers, nobody questioned his role. Indeed, he is held in great esteem by many within the internet "old guard".

However, rapid growth in commercial use of the internet has led the US government and those intent upon promoting electronic commerce to question whether so much power should be vested in one individual with no apparent accountability.

In a "green paper" published last week, the administration has proposed that the functions of IANA be transferred to a non-profit organisation to be run by a board representing commercial, international and technical interest groups.

Mr Postel says he favours this move. However, his curiously timed "test" is viewed by some as more of a protest against the government proposals.

Underlying the incidents of the past few days is a broad debate over governance of the internet. The government's green paper outlines a gradual transfer of the administration of the internet to the private sector.

It proposes, for example, that the function of registering new web site addresses become a commercial activity with several registrars in different parts of the world competing to provide this service to web site publishers.

In response to the huge growth of the internet in the past two years, which has made it difficult for newcomers to find unique web site names that match the names of their businesses, the green paper proposes five new "domain" names that would add suffixes such as *.web* and *.firm* to the familiar *.com* and *.org*.

The green paper has won broad support in North America. However, it is less widely supported in Europe where a different plan, with greater international involvement, is favoured by some industry and government groups.

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Jon Postel: "Test" that looks like a protest

Budget 'breaks agreed spending ceilings'

By Nancy Dunne in Washington

Republicans yesterday accused the administration of submitting a 1999 budget which violates previous agreements, in order to spend $150bn on new programmes, while imposing the highest level of federal taxation on the American people since 1945.

"So the era of big government is over," said Senator Charles Grassley with heavy irony. "The era of talking about big government being over is over, but that's really all that's over."

Democrats said President Bill Clinton's budget, the first balanced budget to be submitted in 30 years, meets "the real needs of the people", for healthcare, childcare, education and environmental protection.

"It's a happy day," said Senator Ron Wyden, an Oregon Democrat. With that, the usual budget squabble was under way. Robert Rubin, Treasury secretary, and Franklin Raines, budget director, trooped to Capitol Hill for the traditional day-after-budget grilling.

Mr Rubin insisted the document was "rooted in fiscal discipline, yet invests in areas critical to future productivity". He denied Republican charges that it exceeded spending ceilings previously agreed, saying all the proposed initiatives were "paid for" in new taxes and new fees and the closure of tax loopholes.

Mr Raines argued that the budget proposed spending that equalled 20 per cent of gross domestic product, the smallest share in 25 years. "We've reduced the deficit so dramatically over the past five years, we've added comparatively little to the total national debt, compared at least to the last two administrations," he said.

Republicans did not declare Mr Clinton's budget "dead on arrival", as so many Democratic congresses did for Republican budgets. Mr Clinton's proposals are playing too well in the polls.

But Senator Phil Gramm said he wanted to take the proposed new spending "and give it back to working Americans to lower the tax burden so that it might actually decline this year, rather than rise". However, he praised the balanced budget. "That's something we agree on. That is a unity of national purpose," he said.

Rubin: faced traditional Capital Hill grilling

Reuters offshoot had direct HQ link

By Richard Waters in New York

The Reuters subsidiary at the centre of allegations of industrial espionage in the US has been run by long-standing executives from the British information group with a direct reporting line to the company's directors, according to the company and others familiar with its operations.

The close links between the unit and the company's head office, and its strategic importance to Reuters' future, have added to the UK company's discomfort over the espionage claims and could add to the damage if any of the claims eventually prove to be true.

According to a report in the New York Times, federal investigators in the US have spent months in an undercover operation trying to establish whether stolen information was passed from the US subsidiary to London-based executives of the company.

The newspaper alleges that this went as far as monitoring visits by London executives to the unit, Reuters Analytics, which is based in Stamford, Connecticut, a city about 35 miles from New York.

Reuters refused to comment on the reports, but one person close to the company said it had been unable to establish the existence of such an undercover operation.

The head of the unit, Hubert Holmes, was put on paid leave after Reuters learnt of the federal investigation, along with two other Stamford-based executives.

Reached late last week, Mr Holmes said that he was "co-operating and helping with the [internal] investigation" at Reuters into allegations that the unit stole information from a rival, Bloomberg.

Mr Holmes had followed a familiar career track for a Reuters executive, holding senior positions in Asia, the UK and the US. He was hired in Hong Kong at a time when Peter Job, now Reuters' chief executive, was the managing director of its Asian operations.

"He was very close to Peter Job," says one person who used to work on the Stamford project. Another person who worked with Mr Holmes said: "He was very laid back, not at all a detail-oriented guy."

After a period in London as international marketing manager for fixed income products, Mr Holmes was sent to run the Stamford operations after the company acquired Capital Markets Decision.

That company, set up with the backing of Reuters by Stephen Levkoff, a former managing director of Smith Barney, had been formed to develop a product to rival Bloomberg, whose extensive database and sophisticated software had enabled it to gain a big presence in the market for fixed income data.

Mr Levkoff himself suffered a heart attack in the summer of 1993. He finally agreed to sever links with Reuters late that year.

After moving to Stamford, Mr Holmes continued to report to David Ure, a senior Reuters director responsible for new products.

Late in 1996, the responsibility was switched to John Parcell, another director and former head of Reuters in the UK who had been given responsibility for its financial information products.

NEWS DIGEST

Castro rejects US food plan

Cuban President Fidel Castro has rejected as "repugnantly cynical" a proposal for the US to send food and medicine donations to Cuba while maintaining its long-standing economic embargo against the communist-ruled island.

"Cuba is not asking for charity. . . Cuba is asking for an end to the blockade," Mr Castro said during a four-hour live television speech on Monday night.

He said the proposal announced last week by the Miami-based anti-Castro Cuban American National Foundation (CANF) was a "vulgar response" to a call from Pope John Paul II – made during a historic visit to Cuba last month – for the US to end its 36-year embargo against the island.

While criticising Cuba's one-party socialist system, the pope also condemned "oppressive economic measures – unjust and ethically unacceptable – imposed from outside the country", a reference to the US embargo.

Mr Castro also repeated Cuban allegations that the Cuban American National Foundation had organised and financed bomb attacks against tourist installations in Cuba last year. Foundation leaders have denied the charge. *Pascal Fletcher, Havana*

■ US ECONOMIC INDEX

Continued growth expected

The important index of leading economic indicators was unchanged in December, but US economists said yesterday it pointed to continued growth at least through the early part of this year.

The index, compiled by the Conference Board, a business research group, stood at 104.5, unchanged from November. Although it fell short of the 0.1 per cent gain which market analysts expected, the Conference Board said the signs were still good, despite widespread concern that the Asia crisis will adversely affect the US economy.

Six of the 10 components of the index rose, including money supply, factory work-week and stock prices. One component – manufacturers' new orders of capital goods – fell sharply.

"There is little evidence of cyclical imbalances that would jeopardise the economy's stability," the Conference Board said. In the six months to the end of December, the leading index rose 0.9 per cent. The December measurement is being described as a "pause".

The Commerce Department also reported yesterday that new home sales fell sharply in December, although 1997 was still the best year since 1978. Spurred by strong labour markets and falling mortgage rates, sales of new single-family houses totaled 800,000, up 5.7 per cent from 1996. *Nancy Dunne, Washington*

■ BRAZIL

Trade gap ahead of target

Brazil recorded a trade deficit of $717m in January, bigger than expected by the government and independent economists and up from $413m in January 1987. Imports in the month were worth $4.63bn and exports $3.91bn, according to the trade and industry ministry.

Austerity measures introduced in October and November following the Asian crisis had been expected to help reduce imports as the economy slowed. But they have been slow to take effect: imports in January were greater than in December, when the deficit was $709m.

José Roberto Mendonça de Barros, economic policy secretary, said the trade balance would start to improve in February, when petroleum imports would fall and agricultural exports would increase with the new harvest. The balance for 1998 would show an improvement on the deficit of $8.37bn recorded in 1997, with surpluses likely in some months. *Jonathan Wheatley, São Paulo*

■ WORLDCOM/MCI

Jackson hits at merger

The Rev Jesse Jackson's Rainbow/Push Coalition, a pressure group for minority and low-income Americans, yesterday said it would oppose the planned merger of WorldCom and MCI Communications, arguing it would be financed at the expense of low-income and minority residential customers and did not include plans to eliminate discrimination.

The coalition move is also backed by the Communications Workers of America. The organisations said they had asked the Federal Communications Commission, the telecoms industry regulator, to deny the merger on public interest grounds and the Justice Department to reject the merger on anti-competitive grounds. They have also asked the FCC to extend the period for comment on the merger to February 5.

According to the coalition, the non-union WorldCom is the only large US telecoms company with no women or minorities on its 15-strong board. WorldCom officials were unavailable for comment. *Tracy Corrigan, New York*

■ MICROSOFT

States widen inquiries

Microsoft is now the target of a co-ordinated investigation by antitrust regulators from 11 US states who are probing the software company's future product plans.

Subpoenas issued by the state attorneys-general were expected to arrive at Microsoft's headquarters yesterday. They demand information about marketing plans for Windows 98, a personal computer operating system due to be launched later this year.

The states' investigation of future product plans is a significant expansion of Microsoft's antitrust problems beyond the narrower focus of a federal lawsuit filed by the Justice Department.

However, in the federal case Microsoft won a significant ruling in its favour when an appeals court suspended the activities of a "special master" or expert adviser, appointed by the lower court.

Microsoft had objected to the appointment of Lawrence Lessig, a Harvard Law professor, on procedural grounds and also claimed he was biased against the company. The appeals court will now hear arguments on the matter in April. *Louise Kehoe, San Francisco*

NEWS: UK

GTech shares tumble after libel defeat

New Jersey to examine contract with company as Salomon Smith Barney downgrades stock outlook

By Richard Tomkins in New York

GTech shares took another drubbing in the US yesterday amid worries that the Monday's libel verdict against the company in London would hit its chances of winning new contracts and renewing existing ones.

A jury decided that Guy Snowden, GTech chairman, had tried to bribe British entrepreneur Richard Branson in an attempt to make him drop his rival bid to run the UK national lottery. In the two-way libel action, Mr Snowden sued Mr Branson for making the allegation.

The Virgin founder counter-sued Mr Snowden and GTech for calling him a liar. GTech is a member of the Camelot consortium which runs the lottery.

As news of the verdict reached state officials responsible in the US for awarding lottery contracts, at least one GTech customer – New Jersey – expressed concern about the court case.

The New Jersey Treasurer's Office said: "We are going to examine the libel matter and examine our contract with GTech to determine what options the state has and what actions, if any, the state is going to take."

GTech operates the New Jersey lottery under a five-year contract that began in June 1996, with an option to renew in 2001.

GTech's shares were down $1\frac{9}{16}$, or 5.4 per cent, to $27\frac{7}{16}$ by lunchtime on the New York Stock Exchange. That followed a fall of nearly 4 per cent the previous day.

Yesterday's tumble partly reflected a decision by Salomon Smith Barney, an investment bank, to downgrade its investment outlook for GTech stock from "outperform" to "neutral", citing damage to confidence in the company's management and the perception of unethical business practices.

● The operator of Sweden's state lottery yesterday said it had sought assurances from GTech that it had not been involved in dubious business practices, Tim Burt in Stockholm writes. Svenska Spel, which relies on GTech terminals at 4,000 outlets, raised the issue in meetings with GTech officials in the US last December.

Lex, Page 14

National Lottery watchdog resigns

Peter Davis, regulator of the National Lottery, has resigned, Chris Smith, chief minister for culture, said after meeting Mr Davis last night. John Stoker, deputy director-general of the lottery, will take over Mr Davis's duties while a new director-general is sought. The resignation of Mr Davis was demanded on Monday by Richard Branson, victor in the court libel battle with Guy Snowden, chairman of GTech. Yesterday several MPs also urged him to quit.

MPs reject citizenship for empire territories

By Liam Halligan, Political Correspondent

The remaining few territories in the British Empire should be given the "maximum degree of internal self-government", a committee of MPs said yesterday, while refusing to yield to pressure for residents of the territories to be granted British citizenship.

The House of Commons foreign affairs committee said in an interim report into what are now called the Dependent Territories of the UK that extending full citizenship to all 112,000 qualifying residents would "undoubtedly raise very substantial questions". There are 186,000 people living in the territories, of whom about 112,000 now hold British Dependent Territories Citizenship.

The report came ahead of a speech today by Robin Cook, the foreign secretary, in which he is expected to outline the future of the 13 remaining territories and address demands from MPs in the governing Labour party for British status to be extended.

He has been pressed to grant the same status as the citizens of the Falkland Islands and Gibraltar to those of Anguilla, Bermuda, British Antarctic Territory, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, Montserrat, Pitcairn, St Helena, South Georgia and South Sandwich Islands, and the Turks and Caicos Islands.

Donald Anderson, committee chairman, said MPs were "neither for nor against" offering full citizenship to dependent territory residents. "Having received representations from every territory, we saw their concern was not with some abstract concept of citizenship but related to specific difficulties like education and work experience," he said.

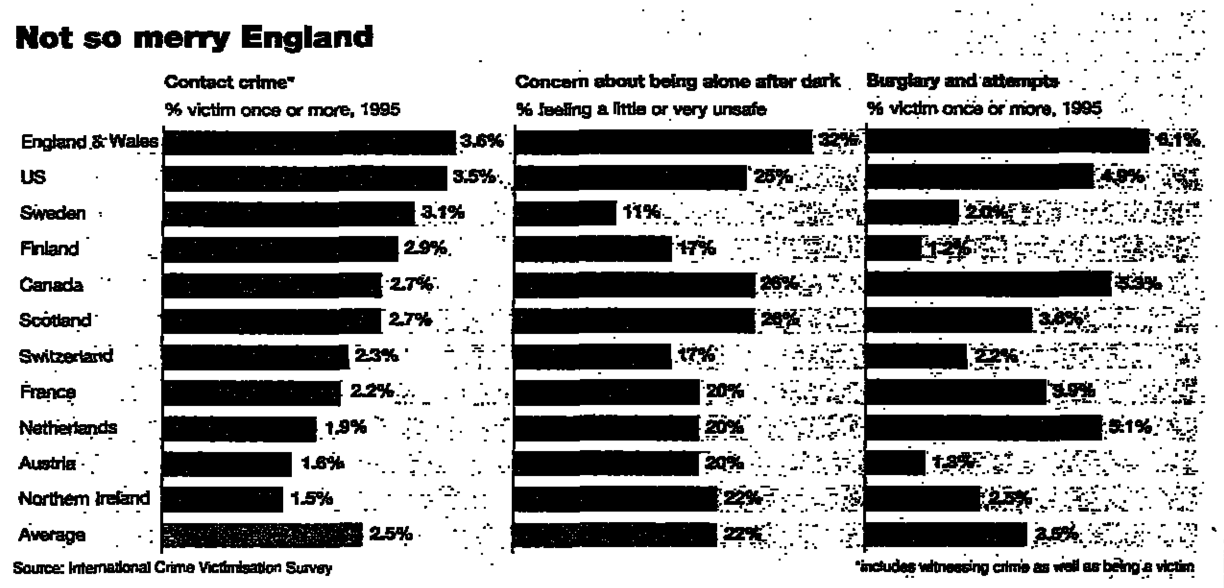
Mr Anderson also called for the "pejorative" term "Dependent Territory" to be scrapped in favour of "British Overseas Territories".

The committee's report acknowledged that while Britain remained responsible for the scattered territories there would be "demarcation problems at the margins, and also straight differences of opinion as to the merits of particular courses of action". It said friction between the British government and the chief ministers of the Dependent Territories "should be minimised".

Fear of being a victim is greater than the actual risk, reports **Simon Buckby**

Bursting jails hide the real picture of violence

Not so merry England



Source: International Crime Victimisation Survey

*includes witnessing crime as well as being a victim

The British government has predicted a rapid rise in the prison population. Forecasts suggest that the present record of 63,400 could reach 92,600 by 2005. This will require, the projections say, up to 24 new jails.

Such statistics on the prison population suggest an alarming image of a crime-ridden Britain, even though the country has some of the toughest gun laws in the world.

But the expected rise would not be caused solely by rising crime. Changing attitudes have resulted in an increase in the number of jail sentences as opposed to other forms of punishment and in the length of sentences.

The picture of the nation so beloved of former prime minister John Major – unarmed policemen cycling past village cricket pitches while decent men drink warm beer in the sun – is out of date. But have things changed so much that London is starting to copy some of the big cities of other countries, with widespread street robberies, burglaries and violence?

US property crime, and even violent crime, have declined since 1991. Some academics claim London now has a 57 per cent higher burglary rate than New York. In Britain the crime rate grew steadily for 30 years up to the late 1980s when it suddenly catapulted ahead of nearly all other industrialised countries.

UK government figures show that between 1990 and 1995 total violent crimes – including robberies, personal attacks and sexual offences – jumped by 22 per cent despite the relative absence of firearms among criminals and law enforcement officers compared with other countries. Burglaries continued to soar until 1993 before falling 9 per cent by 1995. They are still higher than 1990 levels.

The authoritative International Crime Victimisation Survey, which compares people's experiences of crime in 11 industrialised nations, paints a picture of stabilising or falling overall crime rates in the first half of the 1990s in nearly all the countries surveyed. The decline was fastest in the US; England and Wales experienced only a slowing in the rate of increase.

So the facts suggest that for a period around the turn of the decade Britain became a more dangerous place. But the growth in actual crime has been far outstripped by a rise in the fear of crime.

England and Wales now top the international league for home security devices. More than three quarters of homes have an alarm, special locks or grilles on windows or doors. The ICVS shows the English and Welsh to be most frightened of crime. More than 9 per cent think they are "very likely" to be burgled within the next 12 months, compared with 4.4 per cent in the US and 5.9 per cent in France.

The UK government's Crime Survey shows that the British public has an exaggerated fear of attack. Some 78 per cent believe that one in three crimes involves violence. The reality is that fewer than one in 10 is violent.

The mix of rising crime in the late 1980s and early 1990s, together with faster growth in the fear of crime, has tarnished Britain's reputation for safety and security.

The previous Conservative government responded to the public's concern at the rising crime rate with a firm pledge to lock up more criminals; its mantra was "prison works". Jails were suddenly bursting with two or even three inmates held in cells made for one.

The custody rate – the proportion of those found guilty who are then sent to prison – rose from 44 per cent to 60 per cent between 1992 and 1996, as courts responded to politicians' demands for tougher sentences. The length of the average adult sentence was increased from 21 months to 23.4.

The current Labour government has also made law and order a priority. To combat the visible signs of crime – and reduce fear – the government is focusing attention on public order.

Although such measures will not reduce the prison population they should help bring public perception into line with the reality that Britain is no more frightening than most comparable European nations.

Gun laws become tougher

● **1996 Mar 13:** Thomas Hamilton, an authorised owner of guns, kills 16 children and their teacher in a school at Dunblane in Scotland.

● **April 25:** Dunblane parents meet Major and demand tougher gun laws.

● **June 3:** Firearms amnesty: until June 30 all illegal guns can be handed to police without fear of prosecution provided they have not been used in crime.

● **June 30:** Amnesty ends with almost 23,000 weapons handed in.

● **Oct 16:** Government announces gun curbs beyond those recommended by Dunblane inquiry, and claims the reforms will lead to destruction of at least 160,000 weapons – 80 per cent of them legally held.

● **1997 Feb 27:** John Major's government says no handguns of any calibre can be kept at home. Only .22 calibre pistols can be legally held, and they must be kept at secure gun clubs.

● **1998 Feb 1:** Labour government begins ban on all handguns including .22 weapons except antiques and starting pistols. Government says more than £30m has been paid to owners who have handed over legally held guns and ammunition for destruction.

Sports sponsors pay out extra 7%

By Patrick Harverson in London

The value of sports sponsorship deals in the UK grew 7 per cent last year to £321.6m ($537.1m) despite a drop in the number of contracts with cigarette manufacturers, official figures showed yesterday.

But the government's effort to persuade the industry to avoid taking money from companies whose products might harm consumers' health was undermined by the news that the drinks industry remains sport's biggest backer.

Of the record 995 sponsorship deals recorded last year, 163 – 16 per cent – involved drinks companies, including many which promote some of the best known beer and spirits brands.

The motor industry was the second biggest backer, followed by the sportswear sector and banking and finance, which all reported a growing involvement. The number of deals with tobacco companies declined from 34 to 29.

The Department of Culture, Media and Sport reiterated its promise that the government would help sports replace tobacco sponsorship. Under recent legislation, supported by the European Commission, sponsorship of sport by tobacco companies will be banned in five years. But a few sports, such as Formula One motor racing, will be given an additional two years to attract new sponsors.

Although it has ruled out providing financial support to help make up the shortfall, the government intends to set up a special industry group containing five or six prominent figures from the world of sport and business who will work with individual sports to find new sponsors. The members of the group should be announced in coming months.

The growing popularity of sport among companies was underlined yesterday when the Rugby League authorities announced they had signed a two-year sponsorship deal for the Super League with JJB Sports, the sports goods retailer.

The deal, which is believed to be worth £1.3m-£1.5m, replaces a previous contract with Bass, the brewing group, which pulled out of sponsoring rugby league's premier competition late last year.

Forecast of CJD epidemic is reduced

By Alison Maitland in London

The incidence of "new variant" Creutzfeldt-Jakob Disease suggests that 100 to 1,500 people will be affected rather than the tens of thousands once feared, the government's chief adviser on the disease said yesterday.

At the same time, BSE or "mad cow disease" is fast disappearing in the UK, said Professor Sir John Pattison, chairman of the Spongiform Encephalopathy Advisory Committee (Seac).

"I hope and believe that 1998 will be the turn around year for BSE; at the end of 1997 we got to the very bottom of the problem," he said. He added that there was no threat to human health from beef and its products.

His comments on the two linked brain diseases were made to the annual meeting of the National Farmers' Union of England and Wales in London.

The 10 cases of nvCJD last year, the same number as in 1996, indicated that the incubation period of the fatal disease was probably 10 to 15 years rather than 20 to 25 years, he said.

This suggested that the number of cases would be in hundreds rather than 80,000 or even 500,000 as once predicted.

Prof Pattison said some of his colleagues on Seac took a more cautious view, and he stressed that the numbers would inevitably be serious. "Don't forget that this is a dreadful and uniformly fatal disease." However, it was likely the epidemic would be relatively small.

He said the public also appeared less worried about the dangers of BSE than a year ago, pointing to consumers asking for beef on the bone in defiance of the government's ban.

The projected number of BSE cases is 1,741 this year, 641 next year, 235 in 2000 and 89 in 2001. At its peak in 1992, there were 36,682 cases. "These predictions have been very accurate in the past. I have no reason to believe they will not continue to be."

● Sir David Naish, retiring NFU president, told the meeting agriculture desperately needed a single European currency. It would end the dramatic swings in sterling that have left agriculture in serious difficulties.

Acknowledging that this would upset some farmers opposed to monetary union, he said there was no alternative to joining "at the right rate and at an early date."

He said government indecisiveness over joining had hit farmers badly because it had led to continued upward pressure on the pound.

West Africa 'enters premier league of crime'

By Jimmy Burns in London

West Africa has entered the "big league" in organised crime ranging from financial fraud to drugs, a top police officer warned yesterday.

John Abbot, director general of the National Criminal Intelligence Service, said: "These criminals are heavily involved in exploiting individuals, companies and governments all over the world."

He was speaking at the official launch of a new law enforcement unit. The office – to operate under the umbrella of NCIS – will co-ordinate intelligence, investigation and prosecution by UK police, Customs officers, security services and the Foreign Office. It will have a specific focus of West Africa.

According to conservative police intelligence estimates, fraud commited by West African criminals in the UK last year included housing and social security benefits transactions. It was estimated at £3.5bn ($5.8bn) last year with the activity spreading internationally.

One of the most common activities, a favourite of Nigerian fraudsters, is so-called advance-free fraud, in which individuals or companies are drawn into bogus transactions in letters purportedly signed by local government or banking officials.

Last year, 68,000 such letters were handed in by the public to the UK police compared with 52,000 in 1996 and 28,000 in 1995.

Police officers say these figures reflect a growing awareness by the public and an acceleration in the activities of the fraudsters. Currently about 10 per cent of the letters in circulation are thought to involve initial transactions, with about 1 per cent resulting in a heavy loss to the company or the individual.

Although officially announced yesterday, the unit has been undergoing a "development phase" since October 1997.

It is understood to have already intercepted one case involving an unnamed British company and a bogus contract worth £98m in Nigeria, for which the company was originally persuaded to pay £25,000.

Others results achieved by NCIS since October include 25 arrests, the recovery of 26kg of cocaine and the interception of five fraudulent cheques with a total face value of $544m.

UK NEWS DIGEST

Irish premier in terror warning

Bertie Ahern, prime minister of the Republic of Ireland, yesterday warned that "freelance" terrorists were threatening the Northern Ireland peace process. He also voiced concern about an anti-Protestant backlash in the republic following killings of Roman Catholics in Northern Ireland by the breakaway Loyalist Volunteer Force. The LVF rejects the ceasefire observed since 1994 by bigger anti-republican paramilitary groups. Mr Ahern's statement in the Dáil, the republic's parliament, comes amid growing confusion about the latest bout of sectarian threats in border areas. Mr Ahern said there had been warnings from "known as well as unknown organisations". He said: "Apparently, there are a number of younger members of these organisations who are freelancing to quite an extent – and that is a concern."

In border areas yesterday, Protestants working for the environment ministry in Northern Ireland refused to salt roads because of threats, while police in the republic moved to reassure isolated Protestants after threats from an organisation calling itself the Catholic Reaction Force. *John Murray Brown*

■ MINIMUM WAGE PROPOSAL

Armed forces to be exempt

Margaret Beckett, the chief industry minister, has been forced into an embarrassing U-turn by agreeing to exempt the armed forces from the government's planned national minimum wage. The climbdown represents a victory for George Robertson, the chief defence minister. Mrs Beckett and Ian McCartney, the minister responsible for the minimum wage, had insisted that excluding the forces was unnecessary and could open the floodgates to other demands for exemptions. The concession was seized on by John Redwood, the opposition Conservative party's industry spokesman, who has frequently predicted that the government would be forced to water down the measure. He said yesterday: "Why does Mrs Beckett think that the only group in the country who should not be covered by the minimum wage are our brave forces?" Critics suggest the Ministry of Defence is concerned because infantry privates earn close to £3.50 an hour, widely seen as the lowest likely level for the minimum wage. *David Wighton*

■ UNEMPLOYMENT

New measure to be adopted

The government yesterday announced that it would adopt a new monthly measure of unemployment, using an international standard for UK labour market statistics. The move comes after years of criticism by the governing Labour party while in opposition that the previous measure – those unemployed and claiming benefits – had been manipulated and did not give the true level of unemployment. From April, the Office for National Statistics will publish unemployment figures from its Labour Force Survey every month, using standard international definitions of unemployment. The ONS currently publishes the survey every three months. The claimant count will continue to be published alongside the monthly survey. The survey involves 60,000 households, asks individuals directly whether they have looked for a job in the last month and if they are able to start work in the next two weeks. But the two measures show widely differing estimates of the labour market. The most recent LFS survey, conducted in the autumn and published last month, found the unemployment rate was 6.6 per cent. The December claimant count's proportion of the workforce was just 5 per cent. The new measure puts total unemployment at 1.84m, while the latest claimant count total was 1.41m. The old measure particularly understates the number of unemployed women. *Richard Adams*

■ CHANNEL TUNNEL RAIL PROJECT

Regulator resists link concessions

Railtrack would have to improve its investment programme to win any concessions from John Swift, the industry regulator, in return for rescuing the Channel tunnel rail link, it emerged yesterday. The company is the privatised owner of most track in the UK. Mr Swift is understood to oppose to any attempt to "bounce" him into granting favours to Railtrack and would expect any deal to emerge from the two-year review he has just begun into the way the company levies track access charges. Railtrack wants to take over the construction and operation of the 110km link between London and the Channel tunnel following the collapse last week of the original £5.4bn ($9bn) scheme promoted by London & Continental Railways. The regulator has frequently criticised Railtrack for failing to maintain the pace of its £16bn 10-year investment programme. *Charles Batchelor*

■ TRAIN LEASING

Rethink on rolling stock contracts

John Swift, the rail regulator, is to consider whether existing rolling stock leasing contracts should be revised as part of a review of the rail leasing market launched yesterday. Reopening existing contracts, which run for up to seven years, would affect the three rolling stock leasing companies or "roscos." They have tended to assume that any tightening of legislation would only apply to new contracts. Mr Swift is considering introducing controls on the roscos, which supply rolling stock to the privatised train operating companies, if they are found to be abusing their market power. The roscos' activities are covered by general UK competition legislation. *Charles Batchelor*

■ CHINOOK CRASH

Former officer calls for inquiry

A former Chinook squadron leader in the Royal Air Force has called for a new inquiry into the 1994 Chinook helicopter crash in which 25 intelligence experts died in Scotland. Bob Burke, an experienced pilot, said yesterday he had been ordered not to share his expertise with the RAF's investigation into the the crash – which blamed the two dead pilots. *Liam Halligan*

ARTS

Artists drawn to Los Angeles

Lynn MacRitchie finds inspiration in the founding homeland of pop culture

Is it a pig? Is it a potato? No, it is "blackelephanthouse" – the enormous, curvy, blobby, organic, sculpture that Los Angeles artist Peter Shelton is completing at the Henry Moore Studio at Dean Clough, Halifax, where he is visiting artist. Nicknamed "Big Pink", the piece has come a long way from Malibu. There, Shelton's studio, a factory-sized space where assistants whiz around in lift trucks, is set in a canyon among rolling hills. While drinking coffee in Shelton's home next door, floor-to-ceiling plate glass windows allow the visitor to admire the horses coralled on the slope below.

Looking around the studio, the variety of work is striking. Casts for a show in preparation for the Irish Museum of Modern Art represent an anthology of his work of the past decade: 193 elements resembling every sort of body part – arms, legs, hands, feet – are clustered together, like votive offerings to a saint known to cure bodily ills. As an art student in the 1970s, Shelton often felt constricted by minimalism, the doctrine of the time. He has described his progress since then as a long journey back to the exploration of natural form.

The expansiveness and variety of Shelton's work would be unusual in a European or even a New York context, but it is typical of the individuality that is the single characteristic shared by artists who live and work in Los Angeles.

In the spotlight of New York, the pressures of the art market are inescapable. In LA, artists still have time to grow. "LA is a city which leaves you alone," observes Peter Goulds, LA Louver gallery founder, who came to Los Angeles from London 25 years ago.

European ideas of Dada and Surrealism were brought to LA by wartime exiles including Marcel Duchamp and Man Ray, he explained, and were quickly understood and absorbed by local collectors such as Walter Arensberg, patron of Duchamp. Subsequently, local American artists such as Wallace Berman and Edward Kienholz were influential figures in the Beat movement.

Forty years later, when artists are ever more restricted by the demands of dealers and clients, LA still offers them room to be themselves.

One of the LA Louver gallery's most distinguished artists is David Hockney, another long-time British exile. Hockney has been famously inspired by the physical look of LA – including his own house with its lush garden and much-painted swimming pool, and latterly the landscapes of the desert and canyons that surround the city.

Back downtown, a metal door in a small nondescript brick building opens on to his vast working studio. When I visited it, Hockney and his assistants were preparing for the retrospective of his photoworks now at the Ludwig Museum in Cologne. His beloved dachshunds trotting at his feet, the artist hurried in, affable and excited about his new work. He waved his arm towards a huge photo piece taking shape on the studio wall.

"I'm calling it 'Husbandry in the West Riding,'" he told me, gazing happily at the colour laser blow-ups of 60 of his photos of the Yorkshire countryside. He recalled as a teenager stooking corn on the hills now worked by the huge combine harvesters he has photographed. He considers them "just as romantic. They're like huge insects, laying their eggs on the field..."

Hockney's long exile in Los Angeles has not dimmed the sharpness of his observation of his beloved Yorkshire. The county also features in a new series of paintings, currently on exhibition there at Salts Mill near Shipley, their colours as intense as if flooded in Los Angeles' light.

"I'm going back to painting," Hockney observed. "A painting is a real object which can be carried about... all this technology is all very well, but painting takes time, and time is what really matters..."

Since Hockney made his home there in the 1960s, the LA art scene has changed. It used to be that an artist wishing to get on had no choice but to go to New York. Now, some of the most influential figures on the US and international art circuit, including Bill Viola, Chris Burden, Charles Ray, Mike Kelley and Paul McCarthy, are all based in LA. Peter Sellars, the theatre director, moved to LA, he told me, "because Bill Viola lives there, and if art that good is done there, that's where I want to be".

One of LA's strongest points continues to be its art schools, Cal Arts, the Art Centre at Pasadena, the Ottis Art Institute and UCLA. During the 1970s, with little or no infrastructure of museums and galleries, Cal Arts was the hub of the art scene. Mike Kelley, among others, studied there.

Knight, then a curator at the Museum of Contemporary Art in San Diego, put on Kelley's first performance, in 1979.

"I could see he would define the next generation of artists – I don't know if anyone has felt like that about an artist from LA before." Significantly, when Kelley graduated from Cal Arts, he did not leave town. He is still there, settled in a small house in East LA, a part of town that taxi drivers do not like to come to.

Kelley's breakthrough shows were in Germany and at the ICA and Hayward Galleries in London in the early 1990s. His work explores the tatty detritus of teen angst – toys, pennants, clothes, school badges – both on their own and in powerful installations and performances. They have opened up a range of subject matter that has influenced a new generation, including the much vaunted young artists of Britain.

Why did he think his work had had such a powerful influence? "Now that the avant garde is dead," he replied, "the teenager is the last rebel."

Knight confirmed there were now "about 60 galleries I keep my eye on in LA, about five times as many as anywhere else except New York".

As well as this local interest, there is also "huge interest in Europe in LA artists". His explanation for this is worth pondering. "Lately, Europe has been set adrift, has lost its sense of identity. Oddly enough, the one place everyone looks to is pop culture: that has become the one thing everyone shares – and the founding homeland of that is LA. Los Angeles has become the common root of so much of the world, and artists are conscious of this mass cultural experience..."

Or as Mike Kelley put it: "All art is pop art now."

"blackelephanthouse" Henry Moore Studio, Dean Clough, Halifax. Studio visits until 23 May (0113 234 3158). "godspipes", Irish Museum of Modern Art, Royal Hospital, Kilmainham, Dublin, March 5 - June 14 (353 1 612 9900). David Hockney photo retrospective, Ludwig Museum, Bischofsgartenstrasse 1, Cologne, until March 18 (49 (0)221 2212370). Yorkshire landscape paintings, Salts Mill, Victoria Road, Saltaire, Near Shipley, until the end of March (012 74 531163).

Opera/**Richard Fairman**

High-tech Dutch 'Ring'

There is nothing like a new production of Wagner's *Ring* to bring out the powers-that-be in the world of opera. The audience for *Die Walküre* at the Muziektheater in Amsterdam on Saturday was like a roll-call of the most influential operatic bosses from around Europe.

Some may have come because they wanted to hear a specific member of the cast, but in general there will have been a desire to size up what the opposition is doing – in a friendly way, of course. The combination of musical and dramatic challenges presented by each of the four *Ring* operas means that a company has to be on its metal. No better opportunity comes round to judge its present standard and a successful production can set a benchmark for everybody else.

Amsterdam's new *Ring* is being assembled over the course of a year. *Das Rheingold*, unveiled in September last year, suggested it would be a technological *Ring*, full of expensive stage gadgets, but short on human feeling. *Die Walküre*, the second instalment, has now followed with a small shift in emphasis: there was less state-of-the-art technical trickery, but that only laid bare more clearly the lack of engagement with the heart and soul of the opera.

The look of it is certainly striking. Pierre Audi, artistic director of the Netherlands Opera and producer of this cycle, has his eye on a *Ring* for the 21st century. In this high-tech world a vast circular platform swirls around from the rear wall of the stage out across the orchestra pit. Two rows of the audience sit in danger seats, hanging from the ceiling, while the orchestra is squashed into a cut-away section of the acting area in mid-stage surrounded by the drama.

Either that is a meaningful idea on Audi's part, or somebody decided that the orchestra would sound better there, given the Muziektheater's problem acoustics. Unfortunately, Hartmut Haenchen is not the conductor to capitalise on the warmer sound (wind still rather recessed, strings with a nice bloom despite the lack of elbow-room) that he could get from the Netherlands Philharmonic in its makeshift pit. The performance was pedestrian and, what is more, limped along at some slowish walking speeds.

Audi's mostly sensible production contents itself with setting a serious tone and does little else, except mark the conclusion to each act with a *coup de théâtre*. Most bizarre was the end of the first act, when what looked like a railway shed went running off down the tracks, hotly pursued by Siegmund and Sieglinde as if they had just missed the last train to Valhalla. The Ride of the Valkyries was accompanied by some spectacular fire effects, but then there were no flames at all for the final scene, when a wall of fire is exactly what is called for.

In between, some of his cast would certainly have benefited from more intrusive directorial help. John Bröcheler as Wotan has a decent grip on the character and sings acceptably, but lacks the stature for the role. It would take more of a personality to carry off a Wotan with a pigtail. His Fricka, Reinhild Runkel, has been deprived of Freia's youth-endowing apples and has turned into a white-haired old crone since *Rheingold*, though she gets a good grip on the words.

John Keyes made a baritonal, straightforward Siegmund and Nadine Secunde, more effortful vocally than of old, a gutsy Sieglinde. She might with benefit have swapped roles with the still youthful-sounding and lyrical Jeannine Altmeyer, whose stamina ran out before Brünnhilde's role reached its climax. With Kurt Rydl as a vicious Hunding and a lively posse of Valkyries, this was a cast that had the potential to deliver a more interesting and moving performance than we were actually given.

The Netherlands Opera has some good constituent parts to its unfolding *Ring* – an able orchestra, a number of respected Wagnerian voices and, most important, the financial means to achieve its ends – but no single participant seems to have any strong message to put across. The suspicion lingers that the company is climbing this operatic peak simply because – like Everest – it is there.

Jeannine Altmeyer as Brünnhilde in Pierre Audi's new production of 'Die Walküre'

Disorder in the House

The Royal Opera is at an all-time low in the public esteem. Andrew Clark explains why

Six years ago, Nicholas Payne turned down the job of general director of English National Opera, preferring instead to go to Covent Garden as director of opera. On Monday the offer came up again, and this time he accepted. His decision reflects his growing disillusionment with the Royal Opera House, which he joined in the hope of eventually succeeding Jeremy Isaacs as general administrator.

It leaves the ROH in a bizarre situation. The newly-appointed board chairman, Sir Colin Southgate, knows little about opera or dance, but is expected to play a key role in relaunching one of the world's great companies. His chief executive, Mary Allen, had no experience of running a major performing arts organisation before her arrival last September. The company is at an all-time low in public esteem, and its finances are so parlous that it is not able to issue singers' contracts for the summer. No wonder Payne decided to jump ship.

He was twice overlooked as chief executive at Covent Garden – first in favour of Genista McIntosh 18 months ago, then Mary Allen last year – because the board did not think he was a good enough administrator. He now has the opportunity to prove them wrong. Although ENO's financial plight is almost as serious as Covent Garden's, Payne will be joining a company with a strong management structure, a clear artistic profile and a popular mandate – none of which Covent Garden enjoys. He will resume his collaboration with Paul Daniel, ENO's music director, with whom he worked so fruitfully at Opera North in the early 1990s. Most important of all, he will have complete executive responsibility. At Covent Garden, his duties were confined to programming and casting.

Since Allen's arrival, there has been criticism of the apparent under-the-table manner of her appointment, and Payne's departure leaves her more exposed than ever. It also lays bare the ROH's arcane and over-crowded management structure.

The separation of artistic and administrative authority, with the latter paramount, is an anomaly which no other major opera house would tolerate. It encourages board members to interfere in day-to-day management – an opportunity the ousted chairman, Lord Chadlington, and wealthy fund-raiser Vivien Duffield are accused of exploiting.

The result is that no one knows who is in charge. Until the ROH has a chief executive with artistic authority, no amount of independent panels or New Labour directives will give it the credibility it desperately needs. An opera house is not an administrative structure divorced from what goes on stage; it is a living, breathing organism in which artists perform to the highest possible standard for an interested public. You cannot run such an institution unless you have artistic responsibility. That is why Allen's position is untenable.

Look at Peter Jonas in Munich, Hugues Gall in Paris, Ioan Holender in Vienna, Götz Friedrich and Daniel Barenboim in Berlin: all have ballet companies under their wing, all have strong administrative teams – but all bear ultimate responsibility for what happens in their theatre.

At the ROH, by contrast, there are *three* boards, two artistic directors with competing and often conflicting interests, a passive music director and a chief executive who would not know how to cast *La bohème*. Given the ROH's continuing financial problems and Allen's skilful moves to consolidate her position, it is hard to see how anyone but a cipher would want Payne's job.

Under David Webster and John Tooley, the ROH's first two general directors, there was no division of responsibility. Both knew how to run a theatre, and both knew a crotchet from a hatchet. On the recommendation of the 1983 Priestley report, Tooley reluctantly created the post of opera director, but continued to run the show. The role of opera director grew under Isaacs, but it was only after Chadlington became chairman and Isaacs stepped down, that the top job was renamed chief executive, with no artistic responsibility. It meant that in any conflict between administrative and artistic priorities, Chadlington had the final say. And when Allen, Chadlington's friend and former Arts Council colleague, was hastily appointed last year, the lines of authority became even murkier.

Payne's departure means the board is more dependent than ever on Allen to sort out the ROH's political and financial problems. While she is doing so, the only realistic way forward is to cancel next season's projects, close down the company and appoint a small planning team to organise the re-opening of Covent Garden in December 1999. That would give the board time to find a major figure, untainted by the failures of the past 18 months and capable of taking the ROH into the next century.

But with a board chairman who does not want his opera-going downgraded by people in "shorts and smelly trainers", and a chief executive who sits on the very panel, led by Sir Richard Eyre, which is supposed to be coming up with a solution to the mess, who will lay bets on a change of culture at Covent Garden?

INTERNATIONAL ARTS GUIDE

■ AMSTERDAM

EXHIBITIONS
Stedelijk Museum
Tel: 31-20-5732911
www.stedelijk.nl
Stuart Davis (1892-1964): survey of work by the American painter often seen as a link between American modernism, abstract expressionism and Pop Art. Deeply impressed by the painters of the European avant-garde, Davis was also influenced by Afro-American jazz, and made his mark with a series of still lifes on the theme of tobacco; to Mar 29

OPERA
Netherlands Opera, Het Muziektheater
Tel: 31-20-551 8911
Die Walküre: by Wagner. New production conducted by Hartmut Haenchen in a staging by Pierre Audi; Feb 4, 7

■ BARCELONA

EXHIBITIONS
Fundació Joan Miró
Tel: 34-3-329 1908
www.bcn.fjmiro.es
Liza Lou: The Back Yard. Installation by the American artist, which critically recreates the typical American garden; to Mar 15

■ BERLIN

CONCERTS
Philharmonie
Tel: 49-30-2548 8354
Berlin Philharmonic Orchestra: conducted by James Levine in works by Webern, Messiaen and Brahms; Feb 4, 5, 6

■ BRUSSELS

OPERA
La Monnaie
Tel: 32-2-229 1211
El Amor Brujo/La Vida Breve: by Manuel de Falla. Both works are staged by Herbert Wernicke and conducted by Mark Stringer; Feb 4, 5

■ CHICAGO

CONCERTS
Orchestra Hall
Tel: 1-312-294-3000.
www.chicagosymphony.org
Chicago Symphony Orchestra: conducted by Daniel Barenboim in works by Beethoven, Carter and Tchaikovsky; Feb 5, 6, 7, 10

■ GLASGOW

OPERA
Theatre Royal
Tel: 44-141-332 9000
Scottish Opera: Cosi fan tutte: by Mozart. New production by Stewart Laing, conducted by Nicholas McGegan; Feb 5, 7

■ HELSINKI

OPERA
Finnish National Opera
Tel: 358-9-4030 2211
Come back, Gabriel: world premiere of Ilkka Kuusisto's new work based on the true story of a confidence trickster who preyed on lonely women. Conducted by the composer in a staging by Jussi Tapola, with designs by Anna Kontek; Feb 6

■ LONDON

EXHIBITIONS
National Portrait Gallery
Tel: 44-171-3060055
High Society: Edwardian Photographs. A collection of studio portraits, reprinted from a recently rediscovered cache of original negatives. Subjects include Lloyd George, Winston Churchill and Lillie Langtry; to Jun 21

Tate Gallery
Tel: 44-171-887 8000
Per Kirkeby (b. 1938): continuing the series of contemporary sculpture displays, this exhibition includes paintings, sculptures and a specially constructed brick structure by the Danish artist; to May 26

OPERA
English National Opera, London Coliseum
Tel: 44-171-632 8300
● Eugene Onegin: by Tchaikovsky. Conducted by Michael Lloyd in a staging by Julia Hollander; Feb 4
● The Magic Flute: by Mozart. Conducted by Christopher Moulds in a staging by Nicholas Hytner, revived by David Ritch; Feb 5

■ LOS ANGELES

CONCERTS
Dorothy Chandler Pavilion
Tel: 1-213-365 3500
Los Angeles Philharmonic: conducted by Mark Wigglesworth in works by Brahms and Beethoven. With piano soloist Stephen Kovacevich; Feb 5, 7, 8

■ MANCHESTER

CONCERTS
Bridgewater Hall
Tel: 44-161-907 9000
Hallé Orchestra: conducted by Kent Nagano in works by Britten, including his Double Concerto. With viola soloist Yuri Bashmet and violin Gidon Kremer; Feb 5

■ MILAN

OPERA
Teatro alla Scala
Tel: 39-2-88791
www.lascala.milano.it
Die Zauberflöte: by Mozart. Conducted by Riccardo Muti in a staging by Roberto De Simone;Feb 5, 7, 10

■ MUNICH

EXHIBITION
Haus der Kunst
Tel: 49-89-211270
Symbolism in England 1860-1910: previously seen in London's Tate Gallery, this show presents work by British pre-Raphaelites alongside that of their European contemporaries. Includes works by Rossetti, Burne-Jones, Watts and Lord Leighton; to Apr 26

JAZZ
Philharmonie Gasteig
Tel: 49-89-5481 8181
Michel Petrucciani All Star Trio 1998: featuring Anthony Jackson and Steve Gadd; Feb 5

OPERA
Philharmonie Gasteig
Tel: 49-89-5481 8181
Die Zauberflöte: by Mozart. Polish Opera production by Mark Tracz; Feb 6

■ PARIS

CONCERTS
Salle Pleyel
Tel: 33-1-4561 6589
Orchestre de Paris: conducted by Theodor Guschlbauer in works by Roussel and Brahms. With violin soloist Shlomo Mintz; Feb 5, 6

EXHIBITIONS
Musée d'Orsay
Tel: 33-1-4549 1111
www.Musee-Orsay.fr
Manet, Monet, and the Gare Saint-Lazare: places Manet's famous painting in a context provided by works by other artists and a group of related drawings, prints and photographs; to May 17, then transferring to Washington

OPERA
Opéra National de Paris, Opéra Bastille
Tel: 33-1-4473 1300
● Tosca: by Puccini. Conducted by Jan Latham-Koenig in a staging by Walter Schroeter. Maria Guleghina sings the title role; Feb 7, 10
● Tristan und Isolde: by Wagner. New production conducted by James Conlon in a staging by Stein Winge, with designs by Lennart Mörk; Feb 4, 8

Opéra National de Paris, Palais Garnier
Tel: 33-1-43439696
Cosi Fan Tutte: by Mozart. Conducted by Gary Bertini in a staging by Ezio Toffolutti; Feb 5, 8

■ ROME

OPERA
Teatro dell' Opera
Tel: 39-6-481601
www.themix.it
Le Nozze di Figaro: by Mozart. Production for the Teatro Comunale in Florence by Jonathan Miller. Conducted by Hans Graf; Feb 5

■ SAN FRANCISCO

CONCERTS
Davies Symphony Hall
Tel: 1-415-864 6000
www.sfsymphony.org
San Francisco Symphony Orchestra: conducted by Carl St. Clair in works by Haydn, Brahms and Mendelssohn; Feb 5, 6, 7

■ TEL AVIV

CONCERTS
Mann Auditorium
London Symphony Orchestra: conducted by Sir Colin Davis in works by Sibelius and Beethoven; Feb 4, 5, 7

■ TOKYO

CONCERTS
Suntory Hall
Tel: 81-3-3289 9999
Deutsche Oper: conducted by Dietrich Fischer-Dieskau in works by Mozart; Feb 6

■ TV AND RADIO

● **WORLD SERVICE**
BBC World Service radio for Europe can be received in western Europe on medium wave 648 kHZ (463m)

EUROPEAN CABLE AND SATELLITE BUSINESS TV

● **CNN International**
Monday to Friday, GMT:
06.30: *Moneyline with Lou Dobbs*
13.30: *Business Asia*
19.30: *World Business Today*
22.00: *World Business Today Update*

● **Business/Market Reports:**
05:07; 06:07; 07:07; 08:20; 09:20; 10:20; 11:20; 11:32; 12:20; 13:20; 14:20.

At 08:20 Tanya Beckett of FTTV reports live from LIFFE as the London market opens.

Lionel Barber

Europe's exhibits stir

Sir Leon Brittan's EU-US trade initiative carries the message that the EU wants to play a bigger role in a more equal transatlantic partnership

One member of President Bill Clinton's cabinet refers to Europe as The Museum. Visitors can enter the French room, the German room, or the Italian room. Each displays a glorious industrial heritage. Each betrays a musty attachment to the past.

Irving Kristol, an influential conservative writing in the Wall Street Journal, painted a similar picture this week of a petrified society held captive by statism, high unemployment, Green activists, and shrinking populations. Europe was in the process of trying to disengage its economy from the world economy. "A better prescription for ultimate impoverishment could not have been invented," he declared.

Steady on, Mr Kristol. The European Union is not quite ready to play the international pauper. Take a look at the news this week from the World Economic Forum in Davos. European and US officials are considering a sweeping plan to remove barriers to transatlantic trade and investment – an initiative on a scale larger than the Nafta free trade agreement between the US, Canada and Mexico.

Many details have still to be settled. But Sir Leon Brittan, Europe's trade commissioner, has been working on a blueprint for a "transatlantic market place" since late last summer. He has discussed it informally with EU ministers and leading US officials. Tony Blair, the British prime minister who holds the rotating EU presidency, may well raise the issue with Mr Clinton during his trip to Washington tomorrow.

There are four elements: a free trade area in services; a drive to reduce industrial tariffs to zero across the board; an acceleration of mutual recognition agreements on standards, testing and certification of products; and a basket to deal with vexed issues such as public procurement, agriculture and, possibly, provisions on labour and environment standards.

It is unclear whether these elements should be negotiated separately or as a package. But these are tactics. What matters is the broader political message: Europe is mobilising in favour of a more equal transatlantic partnership. In the new order, US military supremacy inside an enlarged Nato alliance will be balanced by EU economic power that derives from its one-third share of world trade, the weight of a future single currency, and an internal market soon to embrace almost 500m consumers.

Sir Leon Brittan – a shrewd observer of US politics – detects a mood swing in Washington. Asia's financial crisis has made Americans think twice. Europe looks more stable, more reliable. Economic and monetary union could have potentially profound consequences for the $1,000bn in goods, services and investment that cross the Atlantic each year. This could be the time to engage the US in a broader dialogue on monetary, trade and investment issues.

Some of these arguments are self-serving. Sir Leon first wants to shore up the free trade coalition in Washington. Mr Clinton's failure to win fast-track trade authority last November revived fears about a Republican majority in Congress retreating into economic isolationism. He also knows that a new trade negotiation with the US offers a chance for the Commission to win the argument it lost in the Maastricht II negotiations, where it failed to win exclusive negotiating authority in services and intellectual property.

Despite these caveats, it is worth considering the proposition that strengthening the transatlantic relationship in 1998 may depend more on Europe than America. In the last multilateral trade negotiations, on financial services and telecommunications, the EU – not the US – took the lead. Arguably, an ambitious EU-US free trade agreement on services, touching on aviation, shipping, and the audio-visual sector, could act as a locomotive to the rest of the world in a new global trade round.

The second argument is that the building-block approach toward a transatlantic market place – first developed through the transatlantic business dialogue in 1995 – has shown its limitations. True, cumbersome regulations were removed last year on information technology products, telecoms equipment, and pharmaceutical production; but progress is painfully slow. National regulatory agencies still rule the roost. Only political leadership can break the deadlock, says a European industrialist.

Sir Leon: shrewd observer of US politics

Meanwhile, niggling trade disputes between the US and EU are proliferating. Beef hormones, meat safety, genetically modified organisms, and the repercussions of the BSE or mad cow disease crisis – these add up to a plethora of health, consumer safety and environmental wrangles that plague EU-US relations.

It was ever thus, but the difference today is the size of the problem. Ten years ago, a dispute over certification could cost $30m; today it can run into billions. Which is why Sir Leon argues that it is time to rethink the politics of trade.

Tariff barriers are not the problem, whatever the French may think. They account for a fraction of EU or US trade. In the next generation of trade issues, regulatory issues will be paramount.

This means zeroing in on standards, norms, certification and testing, particularly in the service sector, the chief source for job creation. Hence the Commission's decision to explore the scope for extending mutual recognition agreements with the US, borrowing the methods used in the 1980s to dismantle barriers to trade and investment in the EU's internal market. The idea is to replace the present patchwork with an overarching agreement on common principles or regulatory convergence.

Numerous questions remain. Will the proposed pacts look like sweetheart deals between rich countries? Will they be compatible with the multilateral obligations of the World Trade Organisation? How will the French be seduced into embracing more free trade? (In Paris, they are already complaining about the EU's free trade *boulimea*). And, finally, the billion-dollar question: will the US submit to legally binding arbitration, especially since the Europeans want to extend the remit of the deal beyond Congress to the "sub-federal" level of the states?

Veteran US trade experts are doubtful. There is a long tradition of unilateralism in Washington. Transatlantic disputes over the anti-Cuba Helms-Burton law and the Iran-Libya sanctions act could flare up again in the next few weeks. This is no time to put Mr Clinton on the spot. A step-by-step approach to the transatlantic marketplace is safer. Anything that smacks of a treaty runs the risk of rejection from Congress.

But Sir Leon – supported by a cross-party coalition in the European Parliament and important sections of European business – is in a hurry. His initiative should be welcomed. It shows that there is life inside the Museum, after all.

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Smoking howitzers

Mark Suzman says the US is turning away from the mega tobacco settlement

It looks innocuous. Just a routine memorandum from a company researcher to a senior executive. But the content could prove explosive. "It is important to know as much as possible about teenage smoking patterns and attitudes," runs the letter. "Today's teenager is tomorrow's potential regular customer."

That inter-office memo from Philip Morris, the tobacco giant, is just one of hundreds of documents made public over the past weeks. Cumulatively, they show what big tobacco's critics have long suspected: companies deliberately targeted young smokers. Together with other papers also subpoenaed by Congress which suggest the industry suppressed scientific research about the dangers of nicotine, they have helped shift sentiment against the proposed 25-year $368.5bn tobacco settlement.

The congressional session that began last week was supposed to be the one in which this huge settlement was signed into law. Under the arrangements, the tobacco companies would settle outstanding lawsuits with more than 40 states and accept tough restrictions on advertising in exchange for immunity from various class action claims in future. But the new documents have made lawmakers reluctant to support the settlement. Some observers think it is even possible that Congress could impose many of the penalties without giving the industry any immunity.

That is a prospect the tobacco companies strongly oppose. "The civil liability provisions of the agreement are necessary to any resolution of this issue," says Scott Williams, an industry spokesman. "The industry continues to support the original agreement."

The problem is almost nobody else does. When the deal was first announced, the companies hoped the vast sums involved would be enough to persuade Congress to approve it quickly. But anti-tobacco groups immediately complained that the settlement was too generous to the companies. Then Bill Clinton, the US president, objected to proposed restrictions on the authority of the Food and Drug Administration to regulate nicotine. He also called for tougher targets for reducing youth smoking, effectively delaying any action until this year.

Now the settlement has become caught up in the budget, which could further reduce the chances of Congress passing the deal as originally outlined. The White House's proposed new budget assumes there will be $65.5bn in revenue from the tobacco settlement over the next five years – more than the deal envisages. This money is earmarked to help pay for popular social programmes from childcare to medical research.

The politics of this are awkward for the Republicans who have tended to support the tobacco settlement: if no deal is reached, they risk being accused of putting tobacco interests above health and education in this November's Congressional elections.

In response to the growing pressure, there are some signs that the tobacco companies are prepared to offer up more concessions in order to keep the immunity provisions. They might, for example, be more flexible on questions such as the value of the settlement and the future role of the FDA. At the same time, the unprecedented apology for past misdeeds made by industry executives in congressional testimony last week has helped improve their public image. "I believe it is immoral ... unethical as well as illegal to market to people underage," Steven Goldstone, chairman and chief executive at RJR Nabisco, told the House Commerce Committee.

As a result, there is still some chance of a tougher version of the original proposals passing. "I'd say the prospects are slightly less than even at the moment," says one congressional aide. "There are a lot of unresolved difficulties but I think everyone would still quite like to make a deal if only because it would be a high-profile legislative success in a year not much else is likely to be done."

With sentiment in Congress finely balanced, though moving against the settlement, the outcome may depend on what happens in the courts. The tobacco industry has never lost a big lawsuit. So far, three states – Mississippi, Florida and Texas – have settled out of court for sums roughly equivalent to their share of the proposed settlement. Here too, matters could be moving against the deal.

A fourth case, in Minnesota, is under way. Hubert Humphrey, the state's attorney-general and a staunch opponent of the national deal, so far shows little sign of agreeing to settle out of court. Millions more pages of documents have been collected for this trial but remain secret. The industry says these are not damaging, and has agreed in principle to release many of them. Mr Humphrey claims that, compared with the smoking guns so far revealed, several "smoking howitzers" remain protected by attorney client privilege. A decision in this case could tilt the balance of opinion in Congress.

As if that were not enough, the Justice Department last month brought criminal charges against a California biotechnology firm for conspiring with Brown & Williamson, one of the tobacco companies backing the deal, to develop and illegally export tobacco with extra nicotine. And last week, anti-trust officials announced they were investigating possible price-fixing by the industry on tobacco-leaf shipments.

Although both cases are relatively minor, if formal charges against tobacco companies follow, Congress will be even more reluctant to press ahead. The "great settlement", it seems, may not be the last word after all.

·LETTERS TO THE EDITOR·

Number One Southwark Bridge, London SE1 9HL

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Labour concerns over Glaxo-SmithKline

From Mr Jeremy Lever QC.

Sir, The proposed merger between Glaxo Wellcome and SmithKline Beecham would constitute a "concentration having a Community dimension" subject to approval by the European Commission under the EU's merger control regulation rather than being subject to the relevant UK legislation (the merger control provisions of the Fair Trading Act 1973). Any public interest implications of the merger for employment in the UK might therefore appear to be irrelevant.

But while that is almost certainly true so far as immediate redundancies are concerned, there is another aspect of the position with regard to employment that has not so far attracted public comment.

It is that the merged concern might well have a dominant position as an employer in the UK market for pharmaceutical research and production staff, i.e. as a purchaser of specialised labour in a substantial part of the EU.

So far as I am aware, the Commission has not previously had occasion to consider the creation of such a dominant position and its implications under the merger control regulation; and in the past the UK's Monopolies and Mergers Commission has declined, in my view regrettably, to consider the effect of mergers on employment opportunities for specialised workers.

It is to be hoped that on this occasion the Commission will adopt a more enlightened position and will consider this aspect of the proposed concentration.

Jeremy Lever,
(non-executive director, Wellcome 1983-94),
senior dean,
All Souls College,
Oxford OX1 4AL,
UK

Asia's systemic problem needs joint solution

From Professor Kenichi Ohno.

Sir, The whole world is abuzz with the Asian crisis, but the most urgent task is to put a stop to the present panic.

I would like to join the debate from that perspective. The Asian currency crisis is a systemic problem with global consequences. The International Monetary Fund's country-by-country approach, dealing out slow and unimpressive tranches of cash in exchange for meeting deeply resented structural conditionalities, is incapable of restoring confidence or preventing a next crisis.

System crises call for system cures. Most Asian currencies are now too volatile and grossly undervalued. We need an urgent meeting of the G7, agreement on mutually consistent exchange rate targets, and an announcement that the seven central banks would intervene to push up the Asian currencies to "appropriate levels". This would curb imported inflation and allay the fear of default in the affected countries.

Outsiders would also benefit if contagion is terminated and the loss of competitiveness is reversed.

It should not be a costly operation. These markets are thin: a little would go a long way. The banks would be investing in currencies which are – thanks to investor panic – greatly underpriced.

And the panic-calming announcement effect would mean that markets would do most of the stabilising work for them.

Kenichi Ohno,
National Graduate Institute for Policy Studies,
Graduate School of Policy Science,
Saitama University,
Urawa, Saitama 338-8570,
Japan

Real competition in US phone industry

From Mr Roy Neel.

Sir, Your leader "US phone mess" (January 15), was deeply lacking in some basic facts. The intent of the 1996 Telecommunications Act was to foster real competition among the local telephone, long distance and cable industries. USlocal telephone companies strongly supported passage of the act, which promised more consumer choices, lower prices, technological advancement and increased competition in the US. The actions of the Regional Bell Operating Companies demonstrate this industry's unquestionable commitment to fostering real competition and ability to compete under fair terms.

As required by the act, local phone companies have aggressively opened their markets to competitors. The facts are: these companies have signed more than 2,400 inter-connection agreements with potential new competitors. Since the act was passed, the Bell companies and GTE have spent more than $4bn (£2.3bn) on opening their networks to competitors. Your editorial's projected local market entry loss of MCI and AT&T at "hundreds of millions of dollars" pales in comparison. The Bell companies and GTE have dedicated more than 8,000 employees to servicing new competitors, and collectively process more than 8,000 competitive orders daily. These six companies have lost more than 1.5m telephone lines to new competitors, most of which are business customers.

All of this progress has happened despite the fact that the Federal Communications Commission's inter-connection rules have been struck down twice by the US Court of Appeals for the Eighth Circuit in St Louis. Clearly, court decisions have not stifled the progress of local competition.

Federal Judge Kendall's decision to allow the Bell companies the level playing ground necessary to foster real competition in the long distance industry, as well as local service, is one that upholds the integrity and spirit of the law. Removing the onerous restrictions on the Bell companies promotes competition in all markets. The Bell companies will continue to open their markets as the law appropriately requires and will now be able to offer the one-stop shopping their customers desire. AT&T and MCI now have greater incentive to offer local service options to residential customers or risk losing that market all together.

Roy Neel,
president and CEO,
United States Telephone Association,
1401 H Street, NW,
Washington, DC 20005-2164,
US

Justifiable investment

From Mr Claude Bouloux.

Sir, You report a "rescue plan" being concocted for the Channel Tunnel rail link project, presumably based yet again on a privately sourced funding package ("Railtrack considers rescue plan", February 2).

If this highly desirable and justified high speed link is not to be delayed further, has not the time come for the UK government to do the sensible thing and finance the investment itself? This is how the French and Belgian governments have proceeded (for the Paris-Tunnel and French Frontier-Brussels corridors respectively) with full blessing from the tax-paying community. I have no reason to believe the British public would oppose such a solution.

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COMMENT & ANALYSIS

FINANCIAL TIMES

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Wednesday February 4 1998

Internet rules

A dispute is brewing over the governance of the internet.

The internet only works because computer databases know the electronic whereabouts of, say, "www.FT.com", allowing messages to flow to and from that address. Maintaining the registry of all the addresses in the ".com" domain (or the ".net" or ".org" domains) is a crucial task.

There is wide agreement that there need to be more such "top-level" domains: ".shop", for example, or ".firm". It is also agreed that there is scope for competitive, profitmaking businesses to handle the process of allocating names.

The disagreement is over how to organise the very top level of this system. An international grouping of internet bodies, meeting in Geneva last year, proposed to entrust the ultimate registries of all the top-level domains to non-profit organisations. Private sector registrars would be intermediaries between these registries and people wanting internet addresses. Ultimate management of the system would reside in an international body based in Switzerland. Disputes about names would be handled by a new system of panels.

This proposal did not find favour in Washington. "American taxpayers, companies and government built the internet," said one influential congressman. It was wrong to cede governance to a global body.

Last week, the US administration proposed instead to allow profitmaking bodies to own the domains. Thus the owner of ".shop" would compete with the owner of ".com". Ultimate management of the system would reside in a US non-profit corporation, run by someone with a business background, with directors from around the world. US trademark law would influence how disputes about names were resolved.

Internet veterans, mostly from the US, see the administration plan as threatening their influence. One of them last week temporarily diverted control of the internet address system from its usual computer – either a helpful test or an ominous demonstration of power.

At one level, the dispute is between old-timers and business people about the commercialisation of the net. But it is also about whether the internet is essentially American or essentially global. There is scope for debate about how best to govern the internet, and the role of profitmaking businesses. But the discussions must take place in an international framework. The US document is described as "a proposed rule of the Department of Commerce", apparently treating the internet as an offshoot of US administrative law. That cannot be right.

Japan-US

The new aviation agreement between Washington and Tokyo will be more effective in opening the Japanese market than the accord the US appeared ready to accept a few months ago. The US negotiators who had been accused of preparing to cave in to Tokyo's protectionism will be delighted at the complaints from Japanese airline executives this week that their government has now conceded too much.

The agreement removes all restrictions on three US airlines – United, Northwest and Federal Express – which will be able to fly to any airport in Japan and on to third countries. Other US airlines will be able to increase their flights to Japan. US airlines will also be able to form close partnerships with Japanese airlines. On the Japanese side, All Nippon Airways gains unrestricted access to the US – a right previously reserved only to Japan Airlines.

The two sides have also agreed to try to reach a new, fully liberalised, agreement within four years. If the new agreement is not reached, US carriers will receive additional rights to fly to Japan. But despite this success, the agreement falls short of the US "open skies" accords with European and Latin American countries and those in Asia.

Under the US-Japan accord, the setting of fares is not fully liberalised. The difficulty in obtaining slots at Tokyo's Narita airport will also remain a problem. US airlines which need slots will have to lease them from Federal Express. European airlines will not be able to get the slots they need.

What the US may come to regret most is that the agreement with Japan marks the end of a loudly proclaimed policy: that Washington would only sign "open skies" agreements with other countries and would not settle for anything less. This position was always less principled than it appeared; it did not extend to opening the US domestic market to foreign competition. But it was consistent.

The US will now move on to another long-held objective: a new aviation agreement with the UK. The UK has said in the past that it wanted a different agreement from those the US has concluded with other countries. It might be even keener on a different agreement now that British Airways is suggesting that Heathrow airport be opened to competition gradually, rather than all at once, when its proposed alliance with American Airlines commences.

The US has always rejected suggestions from the UK that it be treated differently, saying that it only concludes full open skies agreements. After the accord with Japan, these arguments will sound hollow.

Tough choice

Mervyn King, the Bank of England's chief economist, once said that monetary policy should be "boring". By this he meant that the transparency of policy-making should make interest rate changes predictable. The meeting of the Bank's Monetary Policy Committee which starts today, however, could be a bit too interesting. There is more doubt now than there has been for some time about when – and even in which direction – interest rates should change. This meeting could be the most difficult one the committee has faced since its formation in May last year.

Most economists now agree that growth in the UK economy will slow in 1998. But there is fierce debate over how far the slowdown will go, how sharp it will be – and whether it will be enough to keep inflation under control.

Trade is still the main drag on the economy. After a long period in which the manufacturing sector seemed to withstand the strength of sterling, it is now suffering badly – industrial production grew at an annual rate of only 0.8 per cent in November. The trade balance is worsening rapidly, and the Asian crisis is only just beginning to take effect.

The government's tight fiscal policy this year will be another contractionary influence. And the economy is still adjusting to last year's interest rate rises. All this has led some to call for an end to interest rate rises, or even a monetary easing.

But this optimism could be premature. Inflation in the UK is still above target, and is higher than in any other EU country. And there is evidence to suggest that despite some areas of weakness, the economy may still be on course to grow too quickly for comfort.

The buoyancy of the labour market remains a real risk to inflation. With just 5 per cent of the labour force now unemployed, wage settlements are accelerating.

Other signs of strength can be found in the service sector, which grew by 1 per cent in the fourth quarter of 1997 alone. And domestic demand shows little sign of abating. It is true that the deceleration in windfall gains has dampened retail sales slightly. But consumer credit is growing at an annual rate of nearly 16 per cent, monetary growth has not slowed, and consumer confidence is still high.

The strength of domestic demand suggests that one last interest rate rise could be necessary. But the Monetary Policy Committee might justifiably wait until it has more information about just how badly the external sector is doing, and about how this is affecting the rest of the economy, before acting. Either way, it is likely to have to keep rates high for some time before it can be sure that inflation really is under firm control.

Big issue for Europe

European bond markets are catching up fast with their US counterpart, write **Samer Iskandar** and **Edward Luce**

James Carville, Bill Clinton's presidential campaign manager, once said that, if he were to be reincarnated, he wanted to come back as the US bond market. "That way you can terrify everybody."

Now European bond markets seem to have the same idea: from the mass of separate domestic markets is emerging something that could come to rival the massive US one. Europe's bond markets have grown at an unprecedented rate for nearly a decade. They are being used more by companies, so the balance between corporate and government bonds is shifting towards the former, as in the US. And they are offering sophisticated instruments pioneered in America: transactions such as junk bonds and asset securitisation – until recently the preserve of Wall Street hotshots – are becoming common.

If you combine the two largest European bond markets – in Germany and Italy – the total is somewhat larger than the US one ($4,000bn (£2,395bn) against $3,100bn). Admittedly, these totals are misleading: the European numbers include a large amount of government, regional or bank debt that is barely traded or dwindling in importance. It is also misleading to include the $3,000bn eurobond market: that term covers all bonds issued internationally, at least half of which are issued by non-European borrowers, including US companies. So in terms of ordinary traded corporate bonds, Europe remains behind and is even further behind in terms of sophisticated instruments. Its markets have just $2bn in outstanding junk bond issues, against more than $250bn in the US.

All the same, few dispute that Europe's bond markets will sooner or later come to rival that of the US. "We expect the [euro-denominated] debt market to achieve approximate parity with the US within seven to 10 years in terms of size, trading volume and liquidity," says Moody's Investors Service, the credit rating agency. Why is this happening? And what are the implications? There are three main explanations:

● The most important is economic and monetary union. "Perhaps not since the adoption of the Gregorian calendar in 1752 has there been a more significant alignment to facilitate trade among European nations," says a New York-based analyst at Salomon Smith Barney, the US investment bank. "Emu will create a more transparent European capital market, easier for investors to analyse and more attractive to invest in."

The squeeze on public finances required by the Maastricht criteria has already reduced the number of European government bond issues. Now the abolition of up to 11 continental currencies next January is concentrating investors' minds further.

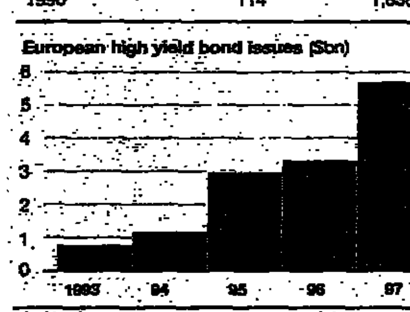
European bond investors have traditionally tried to bet on the direction of interest rates and currencies, pouring much of their investments into European government bonds. They have recently made money by anticipating the convergence of government bond yields towards the German benchmark yield in advance of Emu. Such opportunities are about to disappear.

Europe's markets take off

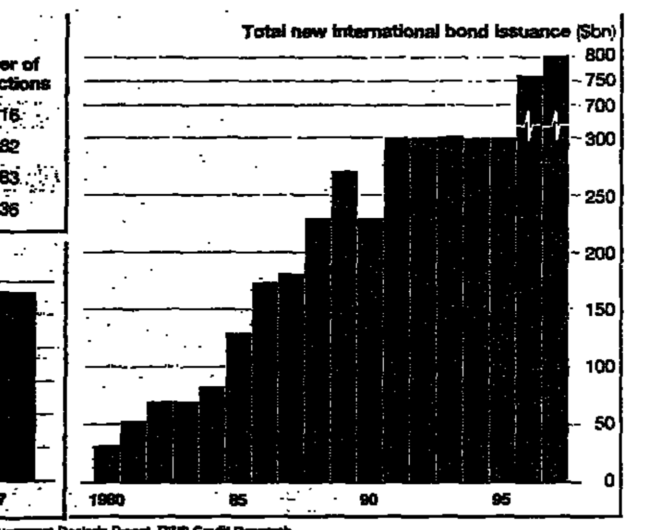
European cross-border deals

	Value ($bn)	Number of transactions
1993	51	1,416
1994	63	1,782
1995	107	1,883
1996	114	1,636

European high yield bond issues ($bn)



Total new international bond issuance ($bn)



Sources: SDC Merger & Corporate Transactions Database; Investment Dealer's Digest, DWS Credit Research

As one door closes, however, another opens. At the moment, most European fund managers are constrained by law (or prudence) from investing in a foreign currency. From January 1999, they will have unrestricted access to up to 10 new stock and bond markets (depending on how many countries get into Emu). Since more than two-thirds of corporate bonds in Europe are issued by triple-A or double-A rated companies – with yields only fractionally higher than government bonds – investors will be forced to switch to lower-grade, or even sub-investment grade, securities to make a healthy return.

"Government bonds and other AAA-rated bonds will be much less attractive to investors after 1999," says Alex Braun, director of funding at Abbey National, the UK bank. "Investors will increasingly be looking to buy single-A and BBB-rated paper issued by companies." These are the ratings just above junk bond status.

In mirror image, single-A and triple-B rated companies will start to switch to bond markets as their main source of capital rather than relying on loans from banks. This in turns means a likely victim of the change will be lending banks, with their traditionally close ties with companies. In continental Europe, commercial banks remain more important as a source of corporate borrowing than in the US or UK. In Germany, for example, outstanding loans to companies equal the country's annual gross domestic product. In the US, the equivalent ratio is just 40 per cent.

"Disintermediation [cutting out banks] is clearly the trend," says Andrew Tinney, a partner specialising in investment banking at Arthur Andersen, the consultancy arm of the accountancy firm. "The reliance on bank lending is falling as the capital markets are developing. Traditional relationship banking is on its way out."

● The second catalyst for change is the expected growth of private pension funds. Governments confront vast and growing unfunded pension liabilities: these amount to 69 per cent of GDP in France, 107 per cent in Italy and 122 per cent in Germany. If, as expected, European governments privatise their pension liabilities as the UK or the Netherlands have done, this will add enormously to liquidity in the bond market.

"Pension and insurance funds need long-term assets to match their liabilities, so they are natural investors in fixed income bonds and other securities," says Aiden O'Mahony, a director at Standard & Poor's, the credit rating agency. "This will open the door to much more long-term bond issuance."

● The growth of cross-border mergers and acquisitions in Europe, which last year topped $100bn again, is the third factor fuelling companies' demand for direct access to capital markets.

"Corporate bond issuance in Europe will take on the importance it has in the US at all levels of the credit curve," says Karsten Moller, director of capital markets at Goldman Sachs in London. "Banks will want to increase their return on capital by securitising their loan portfolios through bond issues."

Corporate restructurings have reached unprecedented levels. Between 1993 and 1996 the value of European cross-border mergers and acquisitions more than doubled, from $51bn to $114bn, according to the SDC Merger and Corporate Transactions Database. On top of this, the volume of M&A deals involving at least one European company – target or acquirer – trebled in three years, from just over $100bn in 1993 to more than $300bn in 1996. A new record is likely to be set in 1997, with preliminary figures from information providers IFR Securities Data showing almost $200bn of transactions in the first half alone.

Alongside the growth in the number and size of M&A deals, market practices have converged towards US standards. "Hostile takeovers and defensive measures such as the 'poison pill' and 'white knight' are on the rise," says Moody's.

Securitisation, or the packaging of assets into securities then sold on to investors, is a strong indicator of growing sophistication in Europe's capital markets. In the early 1990s, securitisation was practically unheard of in Europe, but has become one of the continent's fastest-growing markets. The total outstanding amount of European asset-backed securities is estimated at $150bn against only $30bn in 1993. In 1996 and 1997, several records were set, including the world's largest bond by a non-governmental body – an $8bn securitisation from EPFR, the entity set up to help rescue troubled French bank Crédit Lyonnais.

The first public issues of asset-backed securities in Spain and Germany took place only in the past few months. National Westminster, the UK bank, also launched the first European securitisation of corporate loans in the last quarter of 1996.

"European securitisation is maturing," says one banker in London. "Only two years ago, the technique was associated with large-scale restructurings or bail-outs, such as the Crédit Lyonnais and GPA deals. Now it is possible to securitise any pool of assets large enough to make a liquid bond."

New asset classes being repackaged into bonds include car loans, credit-card receivables and home mortgages.

The fledgling European junk bond market is yet another transatlantic import. "The European corporate debt market looks a lot like the US seven or eight years ago," says the head of European corporate bonds at a large US bank in London. "The European bond market will take on the profile of the US very rapidly. Corporate restructurings have created a huge appetite for capital. The rate of bond issuance is going to accelerate very fast."

The dominant presence of US investment banks in Europe is the final factor spurring the Americanisation of the continent's capital markets. Two landmark deals – the mergers of French insurers Axa and UAP, and of pharmaceutical companies Sandoz and Ciba-Geigy – were entrusted to US investment banks. Big US investment banks have also underwritten all of Europe's junk bond issues.

"The US has set the standard for all other markets," says a managing director of a large US bank in London. In Europe, "nobody is questioning this trend. And there is no way back".

· OBSERVER ·

Out of their tidy minds

■ Japanese officials must be beginning to rue the national tradition of meticulous record-keeping. As corruption scandals spiral, the skeletons aren't so much in the cupboard as in the huge piles of paper sitting in banks and brokerages.

For decades, junior employees diligently did what their bosses told them: they took a careful note of everything they did. So they recorded every paper clip and every postage stamp – as well as every fiddled stock market ticket and every minute, sordid detail of the expensive wining, dining and other entertainment of Ministry of Finance officials.

So every time prosecutors seize files from a bank or broker, there's a paper chain of neatly classified crime. And they won't go short of reading material. The Ministry of Finance has told more than 500 staff to provide details of all informal contacts with banks and brokers in the last five years – and, of course, many of those officials will have extensive notes to hand.

This has aroused consternation in the ministry, and there's more trouble on the way. Last week, prosecutors removed a huge number of files in a raid on the MoF's banking and securities offices. "Nobody knows what they will find there, but it could start a whole host of new scandals," says one official close to the investigation.

That is, as long as the crimebusters don't suffocate under a mountain of paper.

Penalty Klaus

■ Nothing is going right for Vaclav Klaus. The prickly economist lost his golden touch when the Czech economic miracle was shown to be a mirage last spring, then lost his premiership in a political funding scandal in November. Half his deputies have defected and his party's poll ratings have halved to around 14 per cent.

Now his attempts to prove that his Civic Democratic party has nothing to hide are blowing up in his face. First, the choice of Deloitte & Touche to examine the books was criticised because the chairman of its Czech outfit Otto Jelinek is on good terms with Klaus. Then Bohdan Dvořák, the party vice-chairman who was leading the internal investigation, resigned in despair. Now Luděk Nezmar, the party's youthful new business manager, has quit after less than a week after it was revealed that he was being chased by creditors from a failed business venture.

Klaus's only consolation is that the funding of the coalition partners which brought him down – the Civic Democratic Alliance and the Christian Democrats, which are in the new government of prime minister Josef Tosovsky – is now attracting scrutiny.

The Social Democrats, riding at around 30 per cent in the polls, must be glad they are almost penniless.

Turned off

■ Accident-prone UBS chairman Robert Studer has never liked criticism. His refusal to listen to Martin Ebner, the bank's biggest shareholder, is one of the main reasons why Switzerland's most powerful bank has been forced into the arms of the smaller Swiss Bank Corporation.

At yesterday's UBS meeting, small shareholders let Studer know what they thought of his stewardship. But Studer was in control of the microphone – and told critics they'd be cut off after five minutes.

Screen test

■ Films are proving something of a political minefield for post-colonial Hong Kong. First there was reluctance by the territory's distributors to screen Hollywood films about Tibet. Then a local council barred a series of short documentaries from an international film festival.

The council said it was motivated by concern that the screenings would give unfair publicity to Christine Loh, a prominent green lobbyist and pro-democracy politician, ahead of elections due in May and who directed *Hello and Goodbye* – one of the short documentaries due to be shown at the April festival.

A barrage of criticism from the film industry yesterday appeared to prompt a retreat by the council. It could now be a case of Hello, not Goodbye, and a happy ending for Loh.

On the scent

■ Whatever befalls Miguel Angel Rodriguez, the new Costa Rican president, as he struts the world stage, he can at least be sure that he's got friends in Paris. After his victory in Sunday's election, Chanel – the perfume purveyor – took out a full-page advertisement in the newspaper La Nación to remind Costa Ricans of their new leader's taste in fragrances.

His wife Lorena says Rodriguez will splash on nothing but Chanel's Egoïste, which might seem an odd choice of aroma – after all, he has just promised everyone that he'll be working selflessly for the nation for the next four years.

The Financial Times

100 years ago

Germany And America In Dispute

Washington, 3rd Feb. Referring to the Prussian prohibition against the importation of fresh fruit from the United States, Mr. Dingley yesterday said:- "It seems the Prussian Government prohibited the importation on sanitary grounds merely to avoid the provisions of the commercial treaties. There is not the slightest ground for the allegation that Californian fruits are affected as they are represented to be. When Germany undertakes to prohibit the importation of American products on sanitary grounds which do not exist, she violates the spirit of the commercial treaties."

50 years ago

Ceylon Becomes A Dominion

To-day Ceylon, which for the past 150 years has been under British rule, becomes a Dominion of the British Commonwealth. The Government is asking a financial expert to come out from England to advise on policy. The present Cabinet consists of fourteen members with Mr. D.S. Senanayake, a moderate politician of great sagacity and experience, as Prime Minister.

FINANCIAL TIMES
Wednesday February 4 1998

Cheap phone calls hit carriers

Budget targets missed as global prices fall by 25%

By Alan Cane in London

The price of international telephone calls is being pushed down faster than some large operators expected, undermining budget targets and forcing emergency restructuring.

The average price per minute of delivering an international call within western Europe or the US fell by 25 per cent last year. A similar reduction this year and further falls of 20 per cent or more annually until 2000 are expected.

This reflects intensifying competition and technical developments. The trend is having a significant effect on some "global supercarriers" – alliances of telecoms operators with substantial wholesale businesses that carry the traffic of other operators.

One such alliance, Global One, owned by Deutsche Telekom, France Telecom and US Sprint, said yesterday it had made "bigger-than-forecast" losses last year because of the price decline and because costs had come down more slowly than expected. Viesturs Vucins, chief executive,
said the company was in discussions with shareholders over the balance between investment and expected return. Global One's shareholders invested $300m in the business in 1997 and are expected to invest $400m this year.

Global One had revenues of $1.1bn last year and expects 35 per cent growth in 1998. It is, however, no longer predicting when it will become profitable.

AT&T-Unisource, the European alliance owned by KPN of the Netherlands, Swisscom, Telia of Sweden, Telecom Italia and AT&T of the US, is streamlining its carrier services division in response to the price fall. About 100 of the division's 150 staff are being sent back to the shareholder companies to prevent duplication of effort.

Unisource said yesterday it thought there would be turbulence in the market "for two to three years". The alliance said it had provisional revenues of about Fl 3bn ($1.4bn) last year and had cut its losses to half the 1996 figure. It expects to break even by 2000.

The decline in prices has been accentuated by full liberalisation of the European Union market since January 1. This has allowed new companies to compete for international business. Liberalisation has essentially spelt the end of the "bilateral system" where big carriers settled the cost of delivering each other's calls between themselves.

Mr Vucins said one consequence of the price fall would be consolidation in European telecoms over the next few years.

Sprint slides 20%, Page 18

Japan to quiz 500 at finance ministry

By Gillian Tett in Tokyo

More than 500 current and former officials at Japan's Ministry of Finance are to be vetted as part of a widening investigation into corruption.

They will be required to submit details of all informal contacts with banks and brokers over the last five years for screening by officials and prosecutors.

The move follows the arrests last week of two ministry officials who allegedly received bribes in the form of lavish entertainment from banks they were inspecting.

The vetting, to be carried out over the next few weeks, will cover all staff who have worked in the banking, securities, inspection and international finance departments.

The ministry, which was raided last week, faces mounting calls for the transfer of some of its powers to a new agency. Haikaru Matsunaga, the newly appointed finance minister, indicated earlier this week that the government hoped to remove inspection responsibilities from the MoF and give them to a new agency within the next three months.

Until now, the government had not been expected to set up the new supervision agency before mid-summer. Mr Matsunaga also called for outside lawyers and accountants to monitor inspections.

The ministry yesterday said it was still unclear how the new agency would be run, who would be in charge, or how many staff it might have.

The original expectation was that some 300 of the 2,000 MoF officials would staff the agency, but in light of the recent scandal, politicians have called for a mass investigation of MoF officials to assess their suitability.

As part of the inquiry, prosecutors and officials will ask staff to submit detailed records of all entertainment received from banks and brokers in recent years. The prosecutors and a committee of government officials will then view the records.

The move has provoked deep concern in the ministry. Fears are rising that the prosecutors are planning more arrests.

One finance ministry official and two employees in other public corporations have committed suicide in the last week, apparently in relation to the scandal.

Prosecutors are also stepping up an investigations of Shokei Arai, a politician of the ruling Liberal Democratic Party, in connection with his links to Nikko Securities.

Observer, Page 13

Lukoil faces licences risk

Continued from Page 1

deprived of the area's reserves. "This [decision] was on the basis of the public request for an investigation, which we submitted on the day after the tender," said Natalya Mandrova, of Yukos. "Of course, the prosecutor's conclusion has created a dead end for both companies."

Dmitry Dolgov, of Lukoil, conceded that the 1975 law was still in force but argued that the government should have taken it into account before the state commission awarded the tender in December.

"I do not know what the government will do. Maybe they will revoke the tender," Mr Dolgov said. "But I hope that common sense will prevail."

He argued that, because of the extensive oil projects in other parts of the Caspian, protecting just the Russian section made little sense.

"If they ban oil extraction, Russia will neither save the sturgeon nor get oil," Mr Dolgov said. "It does little to advance Russia's interests."

Lukoil officials say the area could contain as much as 4.3bn barrels of oil.

Britain poised to crack down over threat to king of beetles

By George Parker in London

Stag beetle: protection from European insect dealers

The British stag beetle is set to join the elephant and rhinoceros in the pantheon of protected species, as ministers seek to thwart a lucrative international trade in the endangered insect.

European insect dealers are thought to be capturing the fearsome-looking creatures in southern England and selling them to collectors or scientists around the world at up to $3,000 a time.

The furtive trade is placing the stag beetle's future in Britain at risk, and ministers are expected to announce shortly that they intend to give it special protection.

Angela Eagle, environment minister, is studying scientific advice that trade in the species should be regulated under the Wildlife and Countryside Act.

The government's scientific advisers say there is "a substantial trade" in stag beetles in continental Europe.

There is also keen interest in the Far East. Upmarket Japanese department stores sell the beetle, whose antler-like jaws are said to resemble an ancient samurai's helmet.

The king of the beetle world often ends life being dissected by scientists or as a curio on a mantelpiece. Growing up to 7cm long, it may look ferocious but offers pathetic resistance to poachers.

The antlered creature is attracted by light, so hunters need only find a colony, wait until dark, and switch on a torch.

The stag beetle, regarded as rare or in decline across most of Europe, is protected in several countries, including Germany and Switzerland.

Valerie Keeble, general manager of the People's Trust for Endangered Species, yesterday welcomed any moves to protect the beetle, which is almost entirely confined to the south of England.

"We often see stag beetles advertised on the internet and we are keeping a close eye on the situation," she said.

THE LEX COLUMN

Dow and out

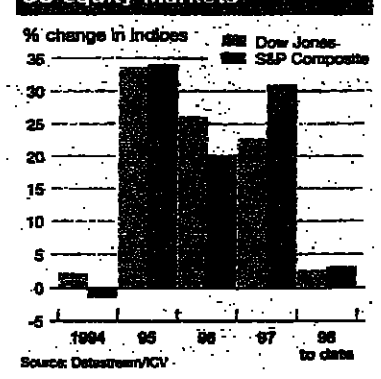
Is the US stock market in record territory or not? The broadest market indicator, the S&P Composite, has followed Europe to new heights this week, passing the 1000 mark for the first time. But the Dow Jones Industrial Average, still the most widely-followed benchmark, remains nearly 200 points or 2 per cent below last August's peak.

The gap reflects the slowing growth of erstwhile investor favourites like Coca-Cola and McDonald's, as well as the lacklustre performance of energy stocks such as Exxon and Chevron, all of which are in the Dow. This points to the index's more serious shortcomings. The Dow is narrow. With just 30 constituents, it covers a mere fifth of the US market by capitalisation. Its British equivalent, the FTSE 100, accounts for three-quarters of the UK market. The Dow is also increasingly unrepresentative of the US economy. It is underweight in both technology stocks and financials, which make up 30 per cent of the market. It contains neither Intel nor Microsoft. And, most bizarrely, it is weighted by share price rather than market value. So price changes in a $100-stock like JP Morgan have a greater impact than ones in General Electric, which is more than 10 times as big.

Publisher Dow Jones, which owns the brand, has recently tried to freshen it up with the launch of index-based options trading and a Dow-based investment trust. But unless it modernises the way the index is composed and calculated, the Dow risks becoming irrelevant.

FTSE Eurotop 300 index
1076.5 (+0.8)

US equity markets



Argos/GUS

After three profits warnings in a year and a near halving of its share price, Argos was a sitting duck. And the degree of opportunism in GUS's £1.6bn ($2.7bn) bid is highlighted by the target's lack of a chief executive – through illness – to lead its defence. It might have staved off the attack by using its flush balance sheet to buy back shares. But, as with its late embrace of home shopping, Argos has been caught napping. The business is far from moribund, however. Its value-for-money offer is appealing to shoppers, its stores are being modernised and there is potential to unlock from its catalogues. Hence speculation about a white knight from either mail order players or retailers.

But pockets will have to be deep. GUS has opened the bidding at about 16 times Argos's forecast 1998 earnings. The target will not fall at this sub-market rating. But it is unclear whether GUS will be prepared to pay very much more. Certainly, its mail order skills could significantly extend Argos's appeal. The Argos format could also bear a wider product range – gadgets from Innovations, which GUS has just bought, are an example.

But Argos also needs tighter management, and here it is not so clear what GUS would bring. Lord Wolfson, the chairman, has convincingly reset priorities at the shopping conglomerate. But his influence has yet demonstrably to filter through all divisions of what used to be a fairly sleepy group.

Energy Group

Now PacifiCorp has raised its offer by 75p to 765p, Energy Group's shares have jumped to factor in counter-bids worth just under 800p. This may be overdoing things. After stripping out the Peabody coal business, the implied exit multiple for Eastern – over seven times earnings before depreciation, interest and tax – is higher than recent regional electricity company deals. The sector has risen and Eastern's higher growth warrants a premium. But, of the mooted bidders, only PacifiCorp has enough synergies to pay this price without destroying value for its own shareholders.

Given Energy's enterprise value of around £5.5bn, forecast 1998 taxed profits, before interest, of about £400m imply a return to PacifiCorp of 7.2 per cent. Using a cost of capital of between 7.5 and 8.0 per cent, PacifiCorp hardly needs exorbitant synergies to make the deal value-enhancing for shareholders. The fact it sees synergies worth £140m a year should give it a vital edge over Texas Utilities and Nomura.

PacifiCorp's other advantage is that it has already jumped through nearly all the regulatory hoops in the US and the UK. A highly-geared bid from Nomura or a bid from Texas that did not involve pre-selling the Peabody business would expose Energy's shareholders to the risk that the regulatory clock would be set back again. Compensating them for that delay would surely raise the cost of the acquisition beyond what their shareholders should be willing to pay.

UK lottery

Richard Branson has scored a great publicity coup in his libel victory – and the subsequent resignations of both Guy Snowden, a director of Camelot, and Peter Davis, the lottery regulator. But it would be wrong to jump to the conclusion that the Virgin chairman has proved his case that the lottery should be run on a charitable basis as he originally proposed.

For a start, Mr Branson himself no longer wants the challenge. Now that he is out of the picture, what chance is there of finding another dynamic entrepreneur willing to give his time for free? More important, the profit motive is not dirty but an important incentive for managements to perform, as Mr Branson knows from his other business ventures. Charities can be amateurish. And, even with a charitable lottery, profit could pop up under different guises – for example, through fat supply contracts. Despite the embarrassing verdict concerning Mr Snowden, Camelot seems to know how to run a lottery that churns out buckets of money for good causes.

Now it is conceivable that Mr Branson's charitable lottery would have churned out even more. But he was not prepared to commit to that. In the original competitive bidding for the lottery licence, Camelot promised to hand 27¾ per cent of what punters paid to the government's good causes. The other six bidders promised between 21½ and 27⅔ per cent. Unfortunately, it is not known whether Mr Branson's bid was near the top or the bottom of that range.

Additional Lex note on Tate & Lyle, Page 20

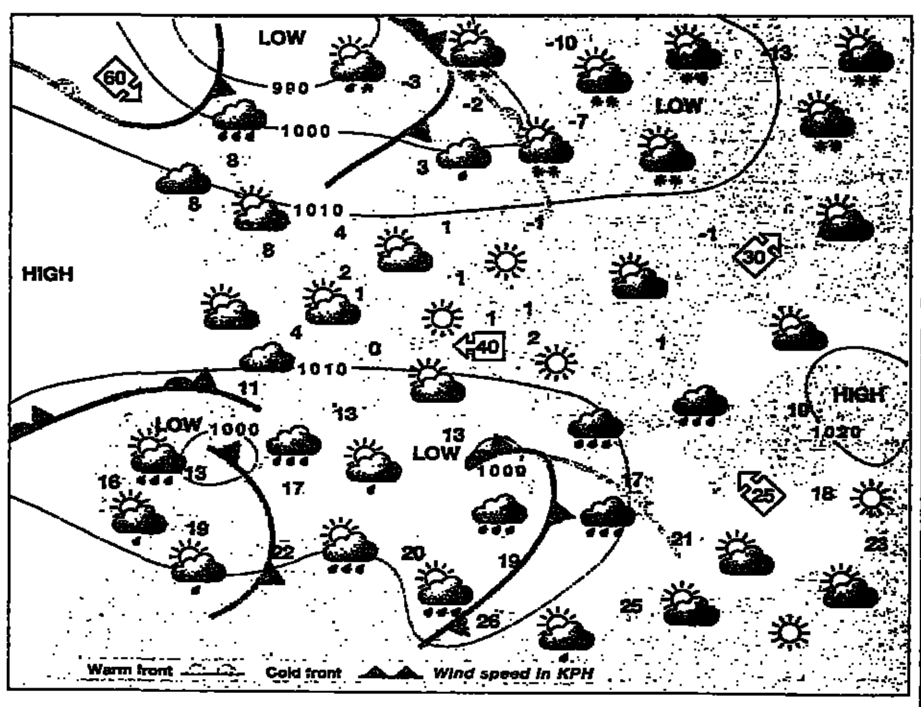
FT WEATHER GUIDE

Europe today

Northern and eastern Scandinavia will be very cold with sunshine and scattered show showers. Southern Scandinavia will see more persistent snow and rain. Eastern Europe will see snow flurries in the north but the south will remain mostly dry. Much of central and western Europe including Germany, France and the Alpine states will stay mostly dry and cold with plenty of good sunshine. The Mediterranean will be very unsettled with rain or showers across most parts. Only the extreme east will stay dry. The rain will tend to be heavy with downpours across Italy and Greece and will extend into the Balkan States.

Five-day forecast

Eastern Europe will have further snow. Scandinavia will also have more snow before the end of the week. Central Europe will be dry and cold with frost and fog until rain and snow moves in from the west over the weekend. The Mediterranean will be unsettled and showery.



TODAY'S TEMPERATURES

Situation at midday. Temperatures maximum for day. Forecasts by PA WeatherCentre

	Maximum	Beijing	Sun 2	Cardiff	Fair 8	Frankfurt	Fair 2	Madrid	Cloudy 13	Rangoon	Sun 35
	Celsius	Belfast	Shower 8	Casablanca	Shower 19	Geneva	Fair 0	Majorca	Cloudy 17	Reykjavik	Snow -3
Abu Dhabi	Fair 26	Belgrade	Fair 4	Chicago	Fair 2	Gibraltar	Thunder 17	Malta	Fair 19	Rio	Sun 33
Accra	Sun 34	Berlin	Fair 1	Cologne	Fair 4	Glasgow	Shower 8	Manchester	Fair 8	Rome	Shower 13
Algiers	Thunder 22	Bermuda	Shower 23	Dakar	Sun 25	Hamburg	Fair 4	Manila	Fair 31	S. Frsco	Fair 15
Amsterdam	Fair 4	Bogota	Thunder 19	Dallas	Fair 11	Helsinki	Snow-10	Melbourne	Sun 27	Seoul	Fair 2
Athens	Rain 17	Bombay	Sun 34	Delhi	Sun 24	Hong Kong	Rain 15	Mexico City	Sun 25	Singapore	Thunder 31
Atlanta	Cloudy 5	Brussels	Fair 2	Dubai	Shower 25	Honolulu	Thunder 27	Miami	Fair 22	Stockholm	Snow -2
B. Aires	Fair 22	Budapest	Fair 3	Dublin	Fair 8	Istanbul	Rain 12	Milan	Fair 9	Strasbourg	Fair 1
B.ham	Fair 7	C.hagen	Sleet 3	Dubrovnik	Rain 13	Jakarta	Thunder 32	Montreal	Fair -2	Sydney	Fair 29
Bangkok	Thunder 34	Cairo	Sun 24	Edinburgh	Fair 9	Jersey	Fair 7	Moscow	Snow-10	Tangier	Shower 17
Barcelona	Shower 15	Caracas	Thunder 29	Faro	Shower 18	Johannesburg	Fair 28	Munich	Fair 1	Tel Aviv	Fair 23
						Karachi	Sun 28	Nairobi	Thunder 28	Tokyo	Fair 10
						Kuwait	Shower 20	Naples	Shower 14	Toronto	Fair 1
						L. Angeles	Fair 16	Nassau	Shower 25	Vancouver	Shower 11
						Las Palmas	Fair 25	New York	Rain 3	Venice	Sun 8
						Lima	Shower 29	Nice	Fair 14	Vienna	Sun 1
						Lisbon	Shower 16	Nicosia	Fair 18	Warsaw	Snow -1
						London	Fair 8	Oslo	Snow -3	Washington	Rain 9
						Lux.bourg	Fair 1	Paris	Fair 4	Wellington	Fair 22
						Lyon	Fair 6	Perth	Sun 27	Winnipeg	Fair 2
						Madeira	Shower 19	Prague	Fair -1	Zurich	Fair 1

FINANCIAL TIMES
COMPANIES & MARKETS
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INSIDE

Deadline nears for CIC bids

The mood is hotting up in Paris as the deadline approaches for candidates to make offers for CIC, the French state-controlled regional banking group. With up to seven candidates expected to bid, the feeling is more positive than in 1996, when the former government *was forced to call* off the privatisation. Page 16

MAN chairman says size means stability

MAN of Germany, *one* of Europe's biggest diversified engineering companies, is often *regarded as a dinosaur*. Yet Rudolf Rupprecht (left), chairman, insists the dinosaur has plenty of life. Mr Rupprecht says the breadth of MAN's activities – giving it expected 1997-98 sales of about DM23bn ($12.6bn) – provides stability, helping the company to push into new markets and share technologies between divisions. Page 17

Asia carmakers running on empty
Car sales in much of Asia have crashed as the financial crisis has spread. In South Korea, Asia's second biggest market, vehicle sales fell about 9 per cent last year. Hyundai Motors, the country's biggest carmaker, expects the home *market to fall* 25-50 per cent. Page 18

Kuala Lumpur market tries to catch up
Malaysian shares recorded their largest one-day gain yesterday, *rising* by 23 *per cent as Kuala* Lumpur returned from its week-long holiday determined to catch up after neighbouring markets rallied sharply. Page 34

Companies in this issue

Market Statistics http://www.FT.com

CROSSWORD, Page 24

Chief price changes yesterday

FRANKFURT (DM)			
Rises			
Alcatel Sel	280	+	14
Gucci	57	+	4
Hamborner	400	+	19
Walter	605	+	35
Falls			
Babcock-BSH	91	–	4
Puma	37.8	–	3.15
NEW YORK ($)			
Rises			
City Natl	37	+	2⅜
Houghton Mif	30	+	2¼
RMI Titanium	22¼	+	2⅞
Timberland A	61½	+	3
Falls			
Cons Cigar	22⅞	–	2½
Fastenal	28¼	–	1⅞
LONDON (Pence)			
Rises			
Abbey Natl	1312	+	62
Argos	630	+	188
BAA	515	+	30
Dalgety	293½	+	11½
Falls			
Boots	858	–	13
Reuters	520	–	28
TORONTO (C$)			
Rises			
Fonorola	27.85	+	2.35
McGraw-Hill	23.25	+	1.35
Molson B	25.4	+	1.2
Mullen Trns	21.0	+	0.5
Falls			
Agnico-Eagle	8.3	–	0.8
Greenstone Res	8.0	–	0.8
PARIS (FFr)			
Rises			
Aurea	62	+	10.85
Baccarat	560	+	59
Georex	13.75	+	1.25
Falls			
AO Capital	123	–	37
Duc Lamothe	300	–	70
Serbo	154.8	–	8.2
TOKYO (Yen)			
Rises			
Aoki	94	+	8
Atsugi Nylon	214	+	10
Chuo Tst & Bkg	382	+	26
Green Cross	330	+	25
Falls			
Marubeni	311	–	5
NTN	402	–	24
HONG KONG (HK$)			
Rises			
Beijing Ent	15.45	+	2.1
China res	14.6	+	1.15
Citic Pacific	28.85	+	1.25
Guoco	14.2	+	0.8
Falls			
CLP	42.5	–	1.5
HK Elect	29.2	–	1.3
BANGKOK (Baht)			
Rises			
Banpu	304	+	36
BEC World	316	+	32
Foremost	108	+	18
Moramoto	46	+	10.5
Falls			
Grammy	310	–	8
Sea Horse	10	–	3.5

New York & Toronto prices at 12.30.

Junk bond interest level reflects investor unease about Japanese banking system

Sumitomo could pay 10% on securities

By Gillian Tett in Tokyo and Edward Luce in London

Sumitomo, one of Japan's *largest banks, could have to* pay a rate of interest of up to 10 per cent on securities it plans to issue in a few days.

The interest rate – equivalent to that charged by borrowers in the sub-investment grade or junk bond market – is much higher than levels typically paid by Japanese banks on international markets and reflects investor unease about Japan's financial system.

"I cannot recall a Japanese *bank paying anything* close to these margins for international capital," said one banker in London. "This is a *measurement of what has happened* to Japan in the last year or two."

Sumitomo announced on Monday it was launching a $1bn issue of perpetual preferred securities shares in the US. The money will be used to bolster its capital base and shield it from currency risks.

The deal is being lead-managed by Goldman Sachs, the US investment bank, with Lehman Brothers a co-manager. *Pricing details are expected* later this week.

But investors and market traders say that the bank may *pay up to 4 percentage points* more than the Libor dollar rate – the rate at which London banks borrow from each other – or the equivalent of 4.5 percentage points over US Treasury bonds. Sumitomo is considered one of the healthier Japanese banks. There are now fears that weaker groups could face severe problems if they try to raise capital in international markets.

Sumitomo officials insist the *higher interest rate simply* reflects the unusual nature of the deal. Other Japanese banks have issued such securi*ties before, but none has done* so in dollars. The securities, which are to be issued through a US subsidiary, are backed by US Treasuries or other high-quality bonds.

Sumitomo says it has decided to raise funds because perpetual preferred shares can be counted as part of the bank's tier one capital, which counts towards its capital requirements under international guidelines.

The move has won praise from some banking analysts, who point out that it could provide a neat solution to the *growing pressure on Japanese* banks to raise capital adequacy ratios. James McGinnis of Dresdner Kleinwort Benson said: "This is a creative move. It should not be seen as a sign of weakness."

But it has also aroused concern that the pressure on banks to raise their tier one capital before the end of the accounting year in March may be more acute than previously realised. This capital has been *badly eroded recently* because of falls in the value of the banks' equity portfolios.

"I am shocked that a Japa*nese bank has to pay these* kinds of rates, but it is a sign of the times," said a senior official at a Japanese bank in London. "Sumitomo cannot afford to wait until margins are more reasonable because it has to boost its capital before the end of the financial year in March."

Brian Waterhouse, analyst at HSBC James Capel, said: "This is a very, very expensive way to raise capital."

Strike hits French exchange

Matif traders in protest at electronic dealing terms

By *Samer Iskandar* in London and Andrew Jack in Paris

A strike by self-employed traders protesting against reforms linked to the introduction of electronic trading has disrupted Matif, the French futures and options exchange.

Fewer than 100,000 contracts were traded on the first day of the strike on *Monday* and only 133,000 contracts changed hands yesterday compared with an average daily volume of 275,000 during 1997.

The strikers – "locals" who speculate with their own money – are concerned about the planned introduction in April of NSC-VF, the Paris bourse's new screen-based trading system.

Matif confirmed that some traders had not been present on the trading floor yesterday. It said the dispute related to the financial terms on which the locals would gain access to the electronic system and on changes to their legal contracts.

It stressed that negotiations were continuing, and said it hoped a conclusion would be reached within a few days. It stressed that the commissions paid by locals to the market authorities had been reduced by 20 per cent for 1998 over the previous year.

Bankers in Paris said the effects of the strike were limited because markets had been calm. The *locals, however,* threatened to extend their action until Friday, when US economic data are due to be published.

Data releases often cause swings in the markets. "If the markets become volatile after the figures and we cannot trade, a lot of people could get hurt," said a trader at a large European bank in Paris.

Locals are essential to the functioning of open outcry trading, where traders face each other on a large floor. *They provide liquidity – the* ability for investors and brokers to trade large amounts quickly and efficiently.

Computerisation is part of *Matif's* preparations for European economic and monetary union, which threatens to shrink the derivatives market by reducing currency and interest rate risk in participating countries.

Matif has also merged with the Société des Bourses Françaises, which runs the French stock exchange and the *equity and index options mar*ket, Monep. The introduction of NSC-VF is part of a strategic link with the Swiss and German exchanges, called Eurex, *which aims to offer the three* exchanges' products on a single electronic trading platform.

On April 3, futures and options on the CAC 40 index of French shares will be transferred to the electronic system. Matif's derivatives on bonds and short-term interest rates will also start trading electronically, but open outcry trading *will be maintained.*

Traders on the floor of Matif. Fewer than 100,000 contracts were traded on the first day of the strike on Monday and only 133,000 yesterday compared with a daily average is 275,000.

Shareholders back UBS over tie-up with SBC

By William Hall in Zurich and Clay Harris in London

Union Bank of Switzerland yesterday won overwhelming shareholder approval for its merger with Swiss Bank Corporation and tried to scotch rumours that had been circulating about the bank for the past month.

UBS also revealed it had SFr1.5bn ($1bn) of loans out*standing to Indonesia, Thai*land and South Korea, the countries most affected by the Asian financial crisis, but said it had made adequate provisions in its 1997 accounts.

SBC said last week its loans to south-east Asia came to about SFr900m. It is expected to give more details about provisions today when its share*holders vote on the merger.*

Robert Studer, UBS's outgoing chairman, said the bank expected to report a "slight technical loss" for 1997 since it had to carry SFr4.2bn of restructuring costs for the enlarged group. The new bank will be called simply UBS.

Although most UBS shareholders backed the deal, yes*terday's meeting was stormy* with many small shareholders directing their frustration at Mr Studer.

Mathis Cabiallavetta, chairman designate of the new bank, denied that the presence of five SBC people and only three UBS people on the new executive board meant UBS was being taken over by the smaller SBC. The aim was to maximise existing strengths and keep successful teams *intact.*

He said: "Given SBC's stronger international presence, we have largely assimilated its structure outside Switzerland, but in the home market, where our position is stronger, the UBS organisation has been adopted."

Mr Cabiallavetta said UBS's London investment banking *operations would suffer* "particularly extensive repercussions" and "considerable shedding of jobs". Acknowledging the "competitive edge" of SBC's Warburg Dillon Read investment banking subsidiary, he said its teams would be kept in place and "reinforced with the best people from UBS".

Although Mr Cabiallavetta gave no more information about UBS's derivatives losses, he said an important objective of the new team was a "comprehensive policy of transparency to all parties involved".

He dismissed rumours that both banks had lost huge numbers of clients.

*UBS executives are confi*dent that implementation of the merger will not be disrupted by the Swiss cartel commission's decision to undertake a full investigation. The enlarged group will start operating "immediately and effectively" as soon as the merger comes into force.

Observer, Page 13

Barry Riley

Active managers and the megastock phenomenon

So much for the "January effect". It originally referred to New Year outperformance by small capitalisation stocks. But this year the relative advance of the large market companies has continued remorselessly. In the UK the FTSE 100 index of blue chips outperformed the FTSE SmallCap index by 3.6 per cent in January (and by *another 2.1 per cent on Mon*day this week), while in the US the S & P 500 beat the Russell 2000 by 2.6 per cent.

We are seeing panic buying as fund managers struggle to gain exposure to a dwindling *group of global megastocks* that show an inconvenient tendency to merge with each other and buy back their equity.

Most institutions have tended to underweight the big*gest stocks in the long term,* but this has proved to be a serious mistake in the past two or three years. The antisize bias has handed the prizes to the index-trackers; so that in US mutual funds, *for example, the S & P* 500 trackers outperformed the average equity fund by some 8 percentage points last year. In the UK the Footsie trackers were 7 percentage points ahead of the average domestic equity unit *trust.*

Active managers face some fundamental decisions. Market concentration is changing their theoretical framework. This is seen most dramatically in the UK, where Glaxo SmithKline alone could represent nearly 12 per cent of the Footsie (and 9 *per cent* of the All-Share index).

If you assume one or two big financial sector mergers will take place this year, the top dozen stocks by capitalisation could soon represent 50 per cent of the Footsie. Moreover, just three sectors – financial services, utilities and pharmaceuticals – already account for more than 50 per cent of this index. Oils make up another 10 per cent.

There is more diversification *in the US, which also boasts* an important technology sector. But the same pattern of growing concentration and outperformance by the biggest stocks applies. A recent study by the consultants Frank Russell showed that US growth managers had underperformed Russell's 1000 Growth index by 450 basis points annually over three years.

> The relative advance of the large market companies has continued remorselessly

The theory underlying active portfolio management is that there is enough choice of uncorrelated stocks and enough price inefficiency to enable good managers to add value. This is more credible among medium-sized and smaller stocks, which is why many active managers have chosen to overweight these tiers of the market.

For many years, it was also possible to argue that smaller cap stocks offered better growth prospects than the lumbering and unwieldy large companies. But this has not been true in the 1990s. Last month Elroy Dimson and Paul Marsh, the two London Business School academics who publicised the positive small company effect in the UK some 10 years ago, concluded that the effect had turned negative, and for sound reasons related *to investment fundamentals.*

This poses a big problem for fund managers. Can they make rational, value-adding judgments about heavily traded and intensively analysed market leaders? The evidence is that they cannot. So should they market-weight them and focus on the smaller stocks to add value? Maybe, but they would have to give up a lot in fees. Yet if they baulk at such a tough decision, their clients may make it for them.

It is hard to abandon old truths. Big corporate bodies used to be thought of as inefficient, ugly and, ultimately, unmanageable. Perhaps they still are: examples of the risks run by large global companies are the Far East derivatives losses at UBS and the alleged plagiarism scandal at Reuters in the US.

But the megastocks have changed their image; and they have certainly changed their behaviour. Bull markets no longer bring forth a flood of new paper. Indeed, buybacks by UK *companies promise to* exceed new equity issues in 1998. That is tough if you are underweight.

Norwegian equity portfolio bids invited

By Tim Burt in Stockholm and Jane Martinson in London

The Norwegian central bank yesterday launched an international bid contest in the fund management industry by seeking tenders for equity portfolios on behalf of the NKr114bn ($15.1bn) Government Petroleum Fund.

Up to 100 fund managers are expected to submit bids for the active equity management and enhanced index management business, due to be awarded later this year.

The advertisement of the tenders through the internet, and the size of the funds, is expected to attract a wide range of managers.

The announcement follows last year's decision by the Norwegian government to shift up to 50 per cent of the petroleum fund from foreign government securities to international equities.

Last month, the Financial Times revealed that Chase Manhattan of the US had been appointed global custodian of the fund, which is expected to be worth NKr570bn by the end of 2001.

State Street Bank & Trust, of the US, and the UK's Barclays Global Investors have emerged as the fund's two senior global index managers, although the central bank has so far declined to confirm their appointments.

Yesterday, the bank said that up to 25 per cent of its equity investments would be handled by enhanced index managers or active equity investors. The remainder would be restricted to index management.

The minimum size of the portfolio offered under the enhanced index mandate has been set at $100m, and $50m for active mandates.

The former is likely to benefit managers which specialise in quantitative management techniques using computerised models to beat the index. This type of fund management is considered to be a more cautious method than the traditional active style.

US groups such as J.P. Morgan, State Street, Capital International and Putnam, and Europeans such as BGI, could benefit from the government's relative aversion to risk, although each manager is expected to be carefully considered.

One industry analyst said the first round of tenders was likely to go to those managers considered to be more cautious. However, once the new system was accepted in Norway, the mandates could become more "adventurous".

Of the total portfolio to be bid for, the central bank has allocated half the assets to investments in Europe, 30 per cent to North America and 20 per cent to Asia.

Knut Kjaer, director of investment management at the central bank, yesterday reminded would-be managers that government regulations stipulated that the petroleum fund should not own more than 1 per cent of any one company.

Lukoil arm buys 51% of Petrotel

By Anatol Lieven in Bucharest

Lukoil Europe, the subsidiary of the Russian oil giant, yesterday bought a 51 per cent share of the Petrotel refinery, Romania's third largest, from the State Ownership Fund (SOF). The $300m price tag includes investment commitments.

The deal marks Lukoil's first important purchase in south-eastern Europe and the first big Russian investment in Romania since the fall of communism.

The Romanian government hopes it will also be a first step to Romania becoming a key route for oil from the new fields of the Caspian Sea.

Sorin Dimitriu, SOF chairman, said the deal was "unexpectedly good" for Romania.

Last August, Petrotel's heavy debts forced the government to place it on the list of plants to be closed. The decision was suspended after worker protests in the nearby city of Ploiesti.

Romania has had little luck with the privatisation of its oil refineries, which were over-developed under the communist dictatorship of Nicolae Ceausescu and are heavily in debt.

A group of Russian businessmen last month bought the small Vega refinery, but plans to sell Petromidia, Romania's biggest refinery, are faltering.

A key to the Lukoil deal is the Russians' commitment to supply Petrotel with crude oil. Petrotel has annual capacity of about 4.2m tonnes. Lukoil expects to supply 3m tonnes of this from its own fields, with the rest coming from Romania.

Lukoil said it would use most of Petrotel's production to supply its own small network of petrol stations in Romania, Bulgaria and Moldova, and its ship-refuelling bunkers in Turkey. The rest would be exported to western Europe. Lukoil is considering expanding its network into Yugoslavia if the economic situation there improves.

At present, more than 90 per cent of Lukoil's crude oil production comes from Siberian fields.

Healthy appetite seen for CIC sale

The mood is heating up in Paris as the February 23 deadline approaches for candidates to make offers for CIC, the French state-controlled regional banking group.

The "data room" of financial information on CIC has now been closed, and rival bidders are finalising their analyses and holding discreet meetings with the bank's executives, French civil servants, regulators, unions and journalists to push their arguments.

With up to seven candidates expected to bid, and the possible tender price rising fast, the feeling is far more positive than in late 1996, when the former centre-right government of Alain Juppé was forced to call off the privatisation.

Last time, just two bidders – the French banks Société Générale and Banque Nationale de Paris – made it as far as the state privatisation commission. It rejected the former because the bid was too low, included a complex securitisation and was heavily wrapped in conditions.

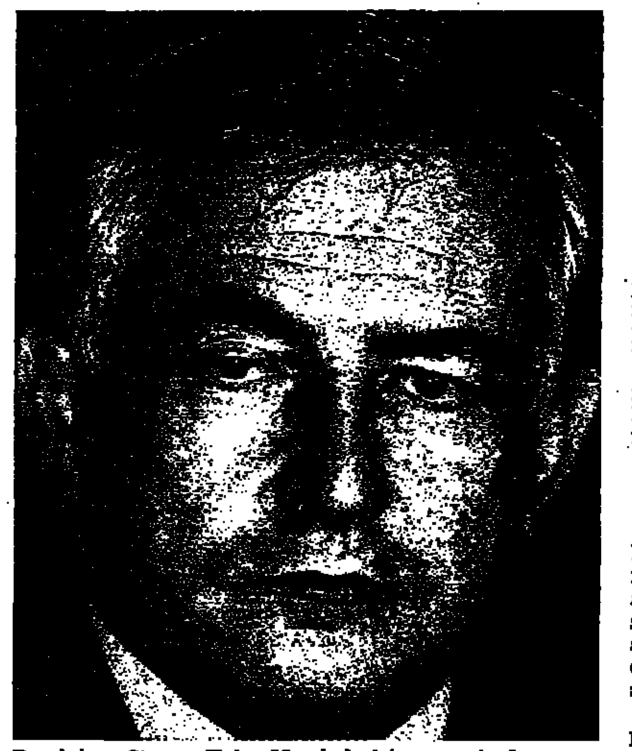
The BNP bid, worth FFr10bn ($1.63bn) for 100 per cent of the shares, would have left GAN, the state-owned insurer which controls CIC, with a heavy capital loss in its accounts. It brought CIC's employees onto the streets to protest, and was denounced by Bernard Yonncourt, the then chairman, as a "death sentence".

This time, everyone has learned lessons from the experience. J. P. Morgan, the privatisation adviser, has allowed bidders greater initial access to CIC's financial information and included in the offer conditions details of state guarantees and accounting adjustments to cover problems that are unearthed.

Dominique Strauss-Kahn, the economics, finance and industry minister, has placed great emphasis on consultations with CIC's unions. He has stressed that the group – which includes 11 different regional banks – must retain its decentralised structure, and said he wanted to encourage staff to buy shares.

But above all, the perception of the French banking sector has improved sharply. The imminent approach of the single European currency, the wave of recent mergers among financial service groups across the continent, and the shrinking number of alternative ways of acquiring market share in France have helped whet the appetite of bidders.

French banks have undergone restructuring and largely digested the costs of excessive property lending in the late 1980s and early 1990s. CIC's own accounts have been redressed, and the group is expected in March to report net income of more than FFr1bn for 1997, albeit with substantial provisions against the Asian crisis, where it has a total exposure of over $1bn.



Dominique Strauss-Kahn: March decision promised Sportsphoto

It should be no surprise that the 1996 bidders have come back again. Daniel Bouton, chairman of Société Générale, argued this week that with the French market "blocked by nationalised and mutualist banks", CIC offered a good way to buy market share.

He claimed that his and BNP's "centralised" approaches were best, in contrast to other bidders which would "juxtapose structures and tensions at each level".

His remarks were targeted at bidders such as Crédit Mutuel, a mutualist regional banking network, and Crédit Commercial de France, which responded by stressing their great expertise in managing decentralised networks such as CIC.

However, political concerns, particularly at a time of high unemployment and concern about the economic health of France's local communities, mean that another group of bidders may be seen more favourably: those which carry almost no risk of duplication with existing domestic banking networks and which will therefore not need to carry out any significant restructuring.

So there is the Dutch bank ABN Amro, already present in France but with little retail presence, and which has recruited Mr Yonncourt, former CIC chairman. And Générale de Banque, the Belgian bank in which the French group Suez-Lyonnaise des Eaux has a stake.

Finally, there is Dexia, formed by the merger of Crédit Local de France and Crédit Communal de Belgique, which has as a result diversified outside both its national boundaries and its more restricted original specialist lending activities.

Mr Strauss-Kahn has promised a decision by the end of March. Whoever wins, the outcome is likely to be good news for the French taxpayer, with a far higher price for CIC than in 1996 – and much closer to the FFr15bn at which the bank is valued in GAN's accounts.

The only question is whether an acquirer with few overlaps with CIC and therefore less need to cut staff will really contribute to the necessary long-term restructuring of the French banking sector.

Andrew Jack

Fauchon delicatessen agrees sale to Waldo

By David Owen in Paris

Fauchon, the luxury delicatessen that has grown to become one of the most famous names in French gastronomy, is set to change hands.

The company disclosed yesterday that Martine Premat, its current owner, had entered a conditional agreement to sell control to Société Waldo, a Paris investment bank.

The disclosure said the conditions had to be fulfilled within three months, but contained few other details. It said Waldo, which is managed by Laurent Adamowicz, had assembled a group of investors to make the acquisition.

Fauchon, founded in 1886, purveys truffles, *foie gras* and the like to a particularly well-heeled clientele from Place de la Madeleine, a gastronome's goldmine in the heart of Paris.

Yvonne De Gaulle, wife of Charles, the former French president, is said to have been a regular visitor.

The group also has an extensive network of distributors and franchisees in 30 countries.

According to one spokeswoman, the company made profits of FFr6m ($982,600) in the year to March 31 1997 on turnover of FFr296m.

Overseas sales accounted for FFr123m of this, with Asia said to be the top export destination.

The company attributed yesterday's decision to the need to find additional capital to finance new development.

Mr Adamowicz for his part, was keeping a low profile yesterday, but his entry in *Who's Who* includes spells with International Playtex, Paribas and Rothschild. He also attended Wharton Business School in the US.

Schroders to advise Poland on phone float

By Christopher Bobinski in Warsaw and Vincent Boland in London

Schroders, the London-based investment bank, was yesterday chosen by the Polish government to advise on and arrange the flotation this year of the country's state telephone operator.

After one of the most hotly contested tender processes of recent years, Schroders won the mandate to privatise Telekomunikacja Polska (TPSA) with Powszechny Bank Kredytowy, against competition from consortia led by Goldman Sachs, HSBC and Credit Suisse First Boston.

The mandate is for the sale of 15 per cent of TPSA's existing equity and a new share issue.

The government plans to float a total of 20 per cent of the company on domestic and international stock exchanges in a transaction worth up to $2bn. It will be Poland's largest equity offering to date.

The competing banks slashed their fees to boost their chances, pushing the overall level of fees to below 1 per cent of gross proceeds – a new low for European privatisation mandates. Fees averaged about 2.5 per cent of gross proceeds last year but have fallen below 2 per cent in recent months.

The state treasury, which ran the tender for the adviser and arranger, did not give reasons for its choice. But Shroders carried out a pre-privatisation study of TPSA, and was also global co-ordinator last year for the flotation of Bank Handlowy, a big Polish bank.

Schroders' proposals are understood to include a success fee of 1.83 per cent of gross proceeds of the international tranche of TPSA's share offer, and 0.1 per cent of the domestic offer. It also proposed a fixed fee equivalent to $3.2m for preparing the flotation.

The government has said it wants the prospectus ready by the middle of the year, with the offer and stock exchange listings planned for the autumn.

Fee levels in the banks' proposals appear to have reflected their assessment of the risks involved in a process which could attract resistance from unions in TPSA worried about job losses, and nationalist politicians eager to maintain state control of the enterprise.

Some of the banks proposed high fixed fees paid regardless of the success of the transaction, and a lower success fee. The Polish government, in common with its counterparts elsewhere in Europe, was known to have placed a high priority on keeping the cost of floating TPSA as low as possible in order to head off political opposition to privatisation.

TPSA will have a market capitalisation of $10bn if the sale of the 20 per cent stake raises as much as hoped. The listing will almost double the size of the Warsaw Stock Exchange, which has a market value of about $12bn.

EUROPEAN NEWS DIGEST

Bull reveals strong advance

Groupe Bull, the French computer company, yesterday announced a strong improvement in net profits but acknowledged that its operating performance was similar to 1996. According to preliminary figures released last night, net profits in 1997 climbed 60 per cent from FFr376m a year earlier to FFr603m ($98.75m). The 1996 figure took into account a one-off loss linked to the restructuring of personal computer businesses. Operating profit was FFr743m, down from FFr780m. The figures were achieved on turnover marginally ahead at FFr24.6bn, against FFr23.4bn. Full results will be published later this month. *David Owen, Paris*

■ ELECTRICAL ENGINEERING

Schneider sees 60% rise

Schneider, the French electrical engineering group, expects to report a 60 per cent improvement in annual profits from FFr1.32bn in 1996 to more than FFr2.1bn ($344m). Didier Pineau-Valencienne, who is soon to stand down as chairman, made the disclosure as 1997 sales of FFr47.4bn were announced. He said operating income was expected to climb 25 per cent to about FFr5bn. *David Owen*

■ CARS

Ferrari reports record sales

Ferrari, Italy's motoring icon mounting a vigorous challenge to win the 1998 Formula One motor racing world championship, yesterday reported record sales for 1997 and revenues topping L.1,000bn ($556m) for the first time in its 50-year history. The company, owned by the Fiat automotive group, also said profits had shown strong growth last year, although it did not give figures.

Sales of its Grandturismo commercial sports cars rose 8.1 per cent last year, with new registrations totalling 3,581 cars, compared with 3,313 in 1996. The US remained the company's biggest single market, absorbing 805 cars, or 22.5 per cent of the total. The next largest markets for new Ferrari sports cars were Germany (605 cars), the UK (421 cars), Italy (391 cars) and Japan (287 cars). The company said it sold a record number of cars last year in Germany, the UK, Japan, Spain and Australia.

Ferrari said last year's record commercial performance reflected the sweeping changes carried out in the production processes as well as in its international sales and service network over the past five years. The return of Ferrari to the top level of Formula One racing also helped commercial sales last year.

The company yesterday appointed Paolo Marinsek to its board. The 47-year-old former Fiat group senior manager is to take over at Ferrari as chief executive in charge of the company's Grandturismo commercial sports car activities. The company's Formula One racing activities run by Jean Todt will continue to report directly to Luca di Montezemolo, Ferrari chairman. *Paul Betts, Milan*

■ SPAIN

Bank sells supermarket stake

Banco Bilbao Vizcaya, the Spanish bank, said yesterday it had sold its 5.04 per cent stake in supermarket group Continente for Pta14.99bn ($97m) to a group of institutional investors, of which 30 were domestic. BBV said the sale of 4.836m shares, at Pta3,100 each, was carried out through a block trade after the market's close on Tuesday.

BBV said it would remain an important shareholder in Continente parent Promodés, in which it is the second largest single shareholder, with a 6.8 per cent holding. *AFX News, Madrid*

■ DISPOSALS

P&G explores opportunities

Procter & Gamble is considering the sale of its NapiSan and Milton brands, which were obtained through the acquisition of Richardson-Vicks in 1985 and which are sold in parts of Asia and Europe.

The group said yesterday that it was exploring selling the brands as part of its strategy to focus on products that offered the best long-term strategic opportunities. NapiSan is a laundry additive, originally positioned as a product for the disinfection of cloth nappies. Milton is an additive used for sterilising baby feeding equipment.

Any sale would include trademarks, formula specifications, advertising and, in some markets, manufacturing equipment. *AFX News, New York*

■ FINLAND

Amer refutes Atomic sale reports

Amer, the Finland-based sports equipment company, said yesterday it had "no intention" of selling its Atomic companies after reports appeared that it was seeking a buyer for the lossmaking operations. The company said in October that Atomic's operations "had been clearly in the red", and that losses for 1997 would be much heavier than in 1996.

The company said yesterday: "Atomic's poor performance has clearly been disappointing. However, Wilson has been performing better than expected as has Amer Tobacco. The group's results will clearly improve compared with 1996, and the results will not materially differ from information provided by the group in October." *AFX News, London*

■ SWISSCOM SELL-OFF

Cantonal banks win lead role

Switzerland's 24 cantonal banks have been chosen over Geneva's private bankers to play a leading role in the forthcoming partial privatisation of Swisscom, the state-owned telecommunications company. The cantonal banks, which control 18 per cent of Swiss bank assets, have been picked as joint lead managers of the Swiss tranche of what will be the biggest flotation in Swiss stock market history.

The decision to upgrade their role follows the planned merger of UBS, Switzerland's biggest bank, and Swiss Bank Corporation, the third biggest. This reduces the number of big banks in Switzerland from two to three. The cantonal banks will work alongside the other two lead managers, SBC Warburg Dillon Read and Credit Suisse First Boston, in marketing Swisscom shares to Swiss clients. *William Hall, Zurich*

Mercedes to resume making A-Class model

By John Griffiths in Amsterdam

Production of the revamped version of Mercedes-Benz's A-Class car model will start next Monday, allowing 150,000 units of the controversial vehicle to reach customers this year, according to Dieter Zetsche, a board member of the German automotive group.

He was speaking on the eve of the Amsterdam Motor Show.

The decision to resume volume production follows an engineering overhaul and a series of market surveys to assess the potential damage to A-Class sales, and Mercedes-Benz's image, by the car's failure in the now infamous "elk" manoeuvrability test late last year.

While the first of the surveys, conducted in all Europe's main markets, showed considerable concern about the A-Class, results from the most recent, received only four days ago, "showed that more than 90 per cent consider that Mercedes' reputation for safety is secure and that the A-Class will be a big success", said Dr Zetsche.

The surveys have now been dropped and Mercedes-Benz expects A-Class output to top 200,000 in 1999.

● Mercedes-Benz's commercial vehicles division expects to lift global sales by at least 10 per cent this year, building on its return to the black in 1997 after nearly a decade of losses.

The division is now on course to meet a target of a 12 per cent return on capital by 1999 after increasing unit sales last year by 20 per cent, to 417,000 trucks, vans and buses, according to Kurt Lauk, Daimler-Benz management board member.

He was speaking at the launch of a new medium-duty truck range, the Atego, in which Mercedes-Benz has invested $1.3bn.

It replaces the 13-year-old LK series, one of the most successful vehicles in the company's history. Some 300,000 LKs have been sold.

The Atego, which spans the strategic 6.5 tonnes to 26 tonnes sector, represents one of the most important elements of a product offensive, under which all Mercedes' truck ranges over six tonnes will have been renewed by the end of this year.

Last year's DM39bn ($21.4bn) turnover from commercial vehicles was a record for the company, the world's biggest truck maker. This represented an increase of 24 per cent on the previous year and had resulted in profits "in the range of a three-digit million figure", said Mr Lauk.

The precise figure, however, will not be released until April.

Profitability is also being helped by cost-cutting measures, which will have saved DM330m by the end of this year. They are allowing the new truck range to be sold at similar prices to the outgoing model, in spite of much greater technical sophistication, according to Mercedes-Benz.

Production at Mercedes' Wörth plant in Germany is to be at the rate of 28,000 units a year, with the vehicles on sale in most European countries by the end of this year.

Additional revenue has also begun flowing from the launch in North America of Sterling, a new truck nameplate for Mercedes to go alongside its Freightliner brand, which is the heavy truck market leader in the region.

Rival seeks fresh talks on Roland acquisition

By Peter Marsh

Heidelberger Druckmaschinen of Germany, the world's biggest maker of printing equipment, is keen to restart talks on acquiring part of Roland, the financially troubled division of MAN, the German engineering group.

The discussions would form part of Heidelberger's plan to build its interests in newspaper printing technology, where it is weak. The company believes its large investments in digital printing techniques could be transferred easily to newspaper systems.

The lossmaking Roland is, with Chicago-based Goss Graphic Systems, one of the world's two biggest makers of newspaper presses.

Heidelberger has already discussed buying Goss, a privately owned company which was until just over a year ago part of Rockwell, the US industrial group. However Goss has said it is not for sale.

Last year's talks about Roland involved Hartmut Mehdorn, Heidelberger chairman, and Rudolph Rupprecht, chairman of MAN.

Although Mr Rupprecht concluded it did not make sense for MAN to sell all or part of Roland, Mr Mehdorn has not ruled out Roland forming part of his plan to boost Heidelberger's DM6bn ($3.3bn) annual sales through a move into newspaper systems.

Heidelberger yesterday announced net profits up 15 per cent to DM312m for the nine months to December on sales ahead 37 per cent to DM4.8bn.

MAN's Roland division last year had sales of DM2.5bn and showed a net deficit of DM115m – the sixth successive year of losses.

Big can be beautiful, says MAN

Despite investor doubts, engineering group's chairman pleads benefits of size

As one of Europe's biggest diversified engineering companies, covering tanks to steelworks, MAN of Germany is often regarded as a dinosaur. Yet Rudolf Rupprecht, chairman, insists the dinosaur still has plenty of life.

Mr Rupprecht says that the breadth of MAN's activities – giving it expected 1997-98 sales of about DM23bn ($12.62bn) – provide stability, helping the company to push into new markets and share technologies between different divisions.

Although MAN has recently paid attention to investors' wishes to see more focus, by reshuffling some of its operations, Mr Rupprecht says of his 28-year MAN career: "I have got to know a lot of these [separate MAN] businesses rather well. I don't have any problem in being in charge of all of them."

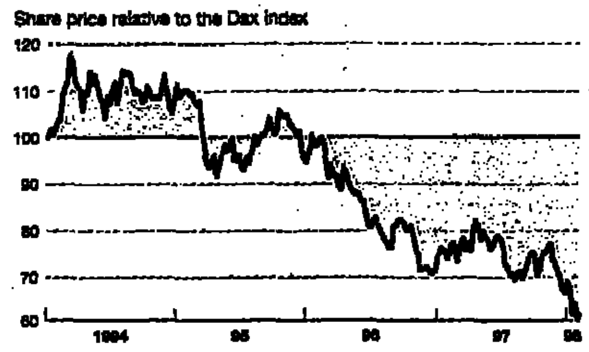
That is not how many investors see things. Since early 1994, the company's shares have underperformed the German DAX stock index by 47 per cent.

Much of the investor angst has centred on the sprawling nature of MAN's business empire – which includes chemical reactors, components for Europe's Ariane space rockets and open-cast mining systems. Besides being Europe's third biggest truckmaker, after Mercedes-Benz and Iveco, MAN owns Roland – one of the world's two biggest makers of newspaper printing presses.

Rudolf Rupprecht: weighs risks and advantages

MAN

Share price relative to the Dax index



Source: Datastream/ICV

The group – which began in 1758 – makes buses and is the world's largest supplier of technology behind large marine diesel engines. It has a 51 per cent stake in SMS, a world leader in continuous casting of steel.

Also under the MAN umbrella is Renk, which makes transmissions for tanks and other vehicles, plus the DM5bn-a-year Ferrostaal subsidiary, which builds bridges and maintains nuclear plants. Mr Rupprecht acknowledges outsiders' concern over whether one company can manage so many disparate businesses. But he says: "We have not fallen from heaven. We have developed over the past 200 years. Each division contains a mixture of risks and advantages."

Recently, MAN's stock has been hit by worries about the company's potential exposure to the economic turmoil in south-east Asia.

But Mr Rupprecht says that only 7 per cent of MAN's sales depend directly on Asia-based customers.

He is sticking to projections two months ago that sales for the year ending in June will grow at between 6 and 10 per cent and that earnings will grow somewhat faster, implying that pre-tax profits will come in at more than DM530m, against DM493m last year.

While MAN is hardly a favourite in the investment community, the company is not without admirers. Gideon Franklin, an analyst at Morgan Stanley, says it contains some "undiscovered gems", while Olaf Tölke, of Merrill Lynch, believes the company's manufacturing breadth will make it among the first to benefit from an expected upswing in the European economy in the final years of this century.

In recent months, there have been rumours about a possible break-up. Late last year a series of reports linked MAN's truck activities – which provide a third of its sales – with Volkswagen. However Mr Rupprecht, who moved into the top job at MAN just over a year ago after running the truck division, rules out any sale: "Trucks are an integrated part of the company."

Mr Rupprecht is similarly emphatic about the possibility of selling all or part of the Roland division, which has lost money for the past six years. However, Heidelberger Druckmaschinen, the acquisition-minded German printing group which is the world's biggest maker of all types of printing machines but is weak in newspaper systems, is keen on further discussions, in spite of being rebuffed last year.

Mr Rupprecht is confident that Roland has turned the corner; the losses will be sharply reduced this year, he says, and it will move into profit in 1998-99.

Efforts to sharpen MAN's focus include an interest in selling off peripheral parts of its empire – which could include, for instance, activities in civil engineering and materials handling. MAN has left areas such as rolling stock and steam turbines.

MAN has also recently made the salaries of its top few hundred managers at least partly dependent on targets. "This shows we are interested in meeting concerns about shareholder value," says Mr Rupprecht.

While the company's sales are split fairly equally between Germany, the rest of Europe and the rest of the world, only a quarter of MAN's 62,000 employees are outside Germany. Mr Rupprecht says this is likely to rise to about 35 per cent over the next five years, from just 21 per cent in 1996, partly because of other countries' lower production costs.

A key area is eastern Europe, where three months ago MAN's truck division agreed a new venture in Belarus with MAZ, the state-owned truckmaker. The venture will produce trucks in Belarus for eastern and western Europe, while MAN has similar plans for bus-manufacturing in Russia.

Peter Marsh and Frederick Stüdemann

Dresdner adds to Spanish arm

By Tom Burns in Madrid

Dresdner Bank, Germany's second biggest, has underlined its global ambitions by strengthening its Madrid investment unit to capture a slice of the growing Spanish corporate acquisitions market in Latin America.

The group yesterday announced the outright purchase for an undisclosed sum of Kleinwort Benson Iberfomento, a Madrid financial firm in which Kleinwort, Dresdner's merchant banking unit, took a 50 per cent stake in 1991.

Jaime Carvajal, Iberfomento's founder who will become chairman of Dresdner in Spain, said the transaction reflected the increasing volume of Spanish investment in Latin America. It was also a sign of Dresdner's interest in Europe's growing capital markets business.

Under Bernard Walter, its new chairman, Dresdner has outlined a growth strategy in its investment banking business which focuses on expansion in areas such as Latin America.

Banco Bilbao Vizcaya and Santander, Spain's two dominant banks, and the telecoms group Telefónica, have already spent about US$10bn acquiring assets in Latin America. Endesa, the big domestic power group, and the oil company Repsol have earmarked some $8bn for investment in the region over the next five years.

Latin America absorbed 48 per cent of Spanish direct foreign investment last year and Spain was the European Union's biggest investor in the region.

Dresdner, which has a presence in Latin America as Dresdner Bank, Dresdner Kleinwort Benson and as Dresdner Bank Lateinamerika, has already worked with Spanish companies in the region.

In Brazil, Dresdner Kleinwort Benson last year acted as adviser to a consortium led by Spain's Gas Natural in the acquisition of a gas business privatised by Rio de Janeiro. It also advised the state of Bahia on the sale of an electricity group to a consortium led by Spain's Iberdrola.

KLM hit as profits disappoint

By Barbara Smit in Amsterdam

KLM shares tumbled in Amsterdam yesterday after the Dutch airline reported much lower than expected third-quarter profits.

However, net profits for the three months ended in December reached Fl 46m ($22m), compared with a loss of Fl 7m the previous year. The airline confirmed its forecast that full-year results would exceed record net income of Fl 547m two years ago, excluding extraordinary income of about $810m for the sale of its 19 per cent stake in US partner Northwest Airlines.

Most analysts had predicted that third-quarter profits would be about twice the reported figure. Richard Brakenhoff, transport analyst at Kempen & Co, said: "It seems that the management's enthusiasm after the second quarter was somewhat exaggerated."

KLM said it had started to feel the impact of the Asian crisis since December. Sales for the quarter rose to about Fl 3.2bn, against Fl 2.6bn.

C&L Chilean firm joins A Andersen

By Jim Kelly in London and Imogen Mark in Santiago

The Chilean practice of Coopers & Lybrand has defected to Arthur Andersen – the first global signal that the mergers among the Big Six firms could have far-reaching consequences, especially in emerging markets.

Jim Wadia, global managing partner of Arthur Andersen, said yesterday he was looking at a further five such deals – one of which would catapult Arthur Andersen from sixth to second position in the national market involved.

C&L's Chilean firm – Langton Clarke – will take to Arthur Andersen 450 professional staff, more than 25 partners, and annual revenues of more than $30m in the first significant defection to follow global merger announcements.

It is also understood that 14 partners from the Chilean member firm of Deloitte Touche Tohmatsu – another of the non-merging Big Six firms – is to join Langton Clarke, eventually becoming part of Arthur Andersen's Chilean organisation.

In theory the combined firm would be a market leader but may lose clients due to conflicts of interest.

The Langton Clarke deal is not a purchase. Its partners will move across to Arthur Andersen and earnings will be adjusted on an annualised basis. There is no goodwill payment and Arthur Andersen will take on existing leases.

Regulators in Brussels and Washington are considering mergers announced by C&L and Price Waterhouse, and KPMG and Ernst & Young. All 138 member firms of C&L had voted for the merger.

The last round of global mergers in the late 1980s saw some fragmentation among the Big Six firms. The mergers are unlikely to be derailed by such moves unless they involve big practices such as the leading US or European firms.

It is unclear what precipitated the switch but Arthur Andersen, which is not seeking a merger, has been hopeful that it will pick up disaffected practices around the world.

There are indications that Langton Clarke may have been dissatisfied with the merger because of Price Waterhouse's dominance in parts of South America. The firm specialises in inward investment from Spain – a country where Arthur Andersen is extremely strong.

C&L sought to play down the move pointing out that the Chilean firm already had close relationships with Arthur Andersen which had no offices in Chile but which put work through C&L. It is understood no other C&L firm has such a relationship.

"There should be additional opportunities to make significant strategic acquisitions of practices and to attract top professionals as a result of these mega-mergers," said Mr Wadia in London.

PepsiCo rises to $446m in final quarter

Taste-good factor: emerging markets helped PepsiCo's revival in international soft drinks AP

By Richard Tomkins in New York

PepsiCo, the US soft drinks and snacks company, yesterday reported a sharp increase in fourth-quarter results as a recovery in its international soft drinks business helped offset a slowdown in snacks.

Net profits from continuing operations rose from $198m to $446m, excluding Pizza Hut, Taco Bell and KFC restaurant operations which were spun off as Tricon Global Restaurants in October.

Earnings per share, fully diluted, rose from 13 cents to 29 cents, in line with analysts' expectations.

The figures benefited from comparisons with a quarter in which PepsiCo's international soft drinks business was reeling from the effects of a failed attempt to attack Coca-Cola in some of its strongest markets.

International soft drink volumes fell in the first half of 1997, but began to recover in the second as Pepsi-Cola International switched its focus to emerging markets and regained a foothold in Venezuela, where Coca-Cola had captured its main bottler.

Fourth-quarter operating losses from international beverages shrank from $397m to $16m. But the recovery was partially offset by a decline in profits from the North American soft drinks business, which reported a fall in operating profits from $328m to $268m.

PepsiCo said the decline was caused by heavy investments in the North American business, including the cost of introducing the blue look for the Pepsi brands and expanding the sales team to pursue new soda fountain business.

The snacks business, which had previously been one segment of PepsiCo's business that could be relied upon to deliver strong growth, also stumbled.

Operating profits from North American snacks rose from $405m to $429m: profits from international snacks edged ahead from $120m to $122m.

PepsiCo said international salty snack volumes rose 10 per cent, but international snack profits were hit by the cost of several long-term volume building initiatives.

Top line growth was slow, with revenues ahead only 3 per cent to $6.3bn. For the year, revenues rose 3 per cent to $20.9bn and net profits from continuing operations rose from $942m to $1.5bn.

Roger Enrico, chairman and chief executive, predicted a year of "solid" earnings per share growth in 1998.

Whirlpool helped by European operations

By Nikki Tait in Chicago

Whirlpool, the biggest manufacturer of large home appliances, posted a recovery in fourth-quarter earnings, helped by a better performance at its European operations and reduced losses from its Asian joint ventures.

The company reported after-tax earnings of $65m from continuing operations in the final three months of 1997, up from $40m. Before one-off items, earnings per share were 86 cents, compared with 53 cents.

Sales for the period were 18 per cent higher, at $2.5bn, partly owing to the consolidation of results from Brazil's Brasmotor group, in which Whirlpool recently doubled its stake to 66 per cent.

The improved fourth quarter left Whirlpool's full-year profits at $238m against $175m, excluding one-off charges, on flat sales of $8.21bn. After charges, profits were $92m in the fourth quarter, while for the full year there was a loss of $15m.

David Whitwam, chairman, said efficiency gains and "strong shipments" led to a 13 per cent increase in final-quarter profits at core North American operations. But he added that appliance industry shipments had been flat last year, mainly *because of slower air-conditioner* sales, and forecast a "slight downturn" in 1998.

In Europe – where Whirlpool went into the red two years ago – the company saw "solid operating profit gains" and a sales increase of more than 8 per cent in local currency terms in the final quarter. It expects the region to show a 2 per cent increase in sales in 1998.

By contrast, Whirlpool's Latin American profits declined in the fourth quarter and the full year, largely owing to the fall in the Brazilian appliance market.

In Asia, where Whirlpool has joint ventures in India and China, the company remained in the red, but losses were reduced from 1997 levels.

Whirlpool shares rose $1⅝ to $59⅝.

Sprint slides 20% as Airtouch gains

By Richard Waters in New York

Sprint, the third largest US *long-distance telephone company*, registered a 20 per cent fall in after-tax profits in the final quarter of last year as it ploughed investment into its new wireless and international business.

However, the company's core long-distance business once again notched up faster growth than its bigger competitors, AT&T and MCI Communications, and it recorded a substantial improvement in operating profit margins in this business during the quarter.

Airtouch, the biggest pure wireless carrier in the US, recorded a jump in net earnings for the final months of 1997, reflecting results from investment in building networks in the US and elsewhere which had held back earnings before.

Sprint said its investment in Sprint PCS, a joint venture building a national wireless service in the US, produced losses equivalent to 36 cents a share during the period, compared with 10 cents a year before. The network so far covers a third of the US population and has nearly 1m customers, Sprint said.

Investments in Global One, an *international joint venture with the* largest French and German carriers, cost 14 cents a share, up from 5 cents in the 1996 quarter.

Other new developments, such as internet access and the development of competitive local services, cost 13 cents a share, up from 5 cents. These costs left Sprint with net income of $195m, or 45 cents a share.

The company's latest figures were underpinned by solid long-distance revenue growth of 6.8 per cent, to $2.3bn, while operating income climbed by 23 per cent, to $316m.

Meanwhile, Airtouch recorded operating revenues of $1.3bn in the final quarter of 1997, up 18 per cent from a year before. Operating cash flow jumped by 48 per cent to $408m, taking the total for the year to $1.7bn – ahead of the $1.5bn target the company had set.

Airtouch's after-tax earnings rose to $97m, or 19 cents a share, from $14m, or 3 cents a share, a year before.

Brinson confirms PDFM autonomy

By William Lewis in New York

Gary Brinson, head of the newly formed fund management arm of *Swiss Bank Corporation and Union* Bank of Switzerland, has confirmed his decision to grant PDFM, its UK asset management operation, autonomous status.

Mr Brinson has also invited Paul Meredith, chief executive of PDFM, to join the executive committee that will run the fund management operations of the merged Swiss banks. "PDFM will continue to operate as it has with the same management structure," Mr Brinson told the Financial Times. He said that Mr *Meredith, Tony Dye, chief investment officer*, and others "will continue to run it just as they always have".

However, the other fund management operations of SBC and UBS are to be fully integrated into SBC Brinson, the Chicago-based fund manager that ran SBC's institutional asset management business.

Mr Brinson said that transition teams were currently being put together. He expects to announce soon the structure of what will be one of the world's largest asset management operations, with approximately $335bn of institutional assets *under management. The operation's* name was still being decided upon, Mr Brinson said. But PDFM, manager of approximately $95bn, is to revert to its pre-UBS name of Phillips & Drew.

In recent years, London-based PDFM has shown poor performance, but most of its pension fund clients have remained with the company in the expectation that it will soon improve. "Their clients have been quite clear in articulating the reason why they have their affiliation with *PDFM*," Mr Brinson said.

However, he added that if "some way down the road" PDFM clients indicated that they were keen to become clients of the global SBC-UBS merged asset management business, "then me, Tony [Dye] and Paul [Meredith] would work to accommodate the clients".

Mr Brinson said PDFM executives would now report directly to him rather than to UBS banking headquarters in Switzerland.

AMERICAS NEWS DIGEST

PDVSA takes refinery stake

Petróleos de Venezuela (PDVSA), *the state oil company*, is to acquire a 50 per cent stake in a 500,000 b/d refinery owned by Amerada Hess, the US oil company. PDVSA is to pay $625m over 10 years for its share in the joint venture company. Under a long-term supply contract, Venezuela will provide half the refinery's crude oil requirements. Over the past few years Venezuela has bought into a number of US refining ventures and service station chains to secure a guaranteed market for its crude oil. The Amerada Hess plant in St Croix, the Virgin Islands, can produce 175,000 b/d of petrol which meets strict US environmental standards.

Raymond Colitt, Caracas, and Robert Corzine, London

■ CONSUMER PRODUCTS

Colgate-Palmolive lifts volume

Colgate-Palmolive, the US consumer products group, lifted unit volume 6 per cent in the fourth quarter, and said every division worldwide achieved solid growth. Its gross profit margin continued to improve and overhead expenses were reduced. Net income increased 14 per cent to $206.4m and basic earnings per share rose from 60 cents to 68 cents. Sales from continuing businesses were up 2 per cent to $2.3bn. This rise would have been 8 per cent if not for foreign currency weakness.

Reuben Mark, chairman and chief executive, said: "The momentum in our global consumer brands is substantial, fuelled by sharp increases in advertising and new product launches. Almost a third of our sales are now from new products introduced in the past five years."

Agencies, New York

■ TELECOMS EQUIPMENT

Newbridge Networks shares slide

Shares of Newbridge Networks fell more than 20 per cent – or C$8.15 to C$29.35 – in early Toronto trading yesterday after the Canadian telecommunications equipment maker warned that sales of its time division multiplexer systems would be harmed by volatility in Asia and Latin America. It said net earnings for the third quarter to February 1 would be 72 per cent lower than expected. Analysts had been expecting earnings of 25 cents, compared with last time's 26 cents.

Scott Morrison, Toronto

■ PAPER

Fort James takes $458m charge

Fort James, the Virginia-based paper company formed by last year's merger of Fort Howard and James River, yesterday announced a restructuring charge of $458m before tax to cover 2,500 job losses, or 8 per cent of the work*force*. It predicted annual savings resulting from the merger of $300m. The charge includes $235m to cover plant closures. It said last month it would close its two smallest US tissue paper mills, in Wisconsin and New York.

Excluding the charge, the company announced results for the fourth quarter which were better than those recorded by most companies in the sector. Operating profits increased 15 per cent to $342.3m.

John Authers, New York

■ ELECTRICAL EQUIPMENT

Emerson Electric ahead 11%

Continued strength in Latin American markets and some improvement in Europe helped Emerson Electric, the US manufacturer of electrical and electronic products and systems, to an 11 per cent increase in after-tax profits, at $282.3m, in the first quarter of its 1997-8 financial year. Sales in the three months to end-December were 12 per cent higher, at $3.12bn, although the company said the underlying increase, excluding currency fluctuations, was 16 per cent. Earnings per share also increased 12 per cent, to 64 cents.

Nikki Tait, Chicago

■ CORRECTIONS

Daewoo Motors

The dollar value of debts at Daewoo Motors was wrongly stated in yesterday's FT as a result of an editing error. The correct figure was $2.9bn.

Cisco Systems

A graphic in yesterday's FT wrongly stated the sales and income of Cisco Systems. Sales in 1995 were $1.98bn and in 1997 were $6.44bn. Income in 1995 was $421m and in 1997 was $1.05bn.

Crisis leaves carmakers running on empty

Asian aftershocks

Car sales in much of Asia have crashed as the financial crisis of recent months has spread. Motor manufacturers inside the region – and those outside – have quickly felt the impact.

The extent to which demand is falling differs across the region, depending on the relative health of national economies and exchange rates. But most manufacturers are feeling the pinch, curbing production and investment in antic*ipation of leaner times*.

Japan, by far the region's biggest car market, is the one least affected. Demand for cars started to soften in April, well before the crisis, after a rise in local sales tax.

New registrations in the country fell 3.8 per cent to 4.49m last year, and this year looks little better: consultants DRI/McGraw-Hill expect a further 1.5 per cent drop to 4.43m, while the Economist Intelligence Unit forecasts a rise of just 50,000 units to 4.55m.

Prospects in South Korea, Asia's second biggest market, are much bleaker. Total vehicle sales fell about 9 per cent to 1.05m units last year on the back of saturation and limited choice.

With the economy now in spasm, prospects are poor. Mong-Gyu Chung, chairman of Hyundai Motors, the country's biggest carmaker, expects the home market to fall 25 per cent "at best" and 40-50 per cent "at worst".

Thailand, Malaysia and Indonesia promise little better. Thailand's financial turmoil has already prompted some Japanese carmakers to halt local production to prevent unnecessary stocks.

General Motors, of the US, which is building a new plant, has frozen construction. Jack Smith, chairman, says GM will have to introduce a smaller, cheaper vehicle as purchasing power crumbles.

Japan's motor industry, already tightening its belt *after April's decline*, is retrenching further in response. Companies such as Toyota, Nissan and Honda are budgeting for lower direct exports to neighbouring countries and reduced sales by the joint ventures they dominate in the region.

Such joint ventures account for a substantial proportion of sales in Asia. Countries such as Indonesia and Malaysia, where tariffs and taxes make direct exports prohibitively expensive, oblige foreign manufacturers to assemble locally.

The Japanese also stand to lose because of a likely decline in royalty payments and revenues for technology transfers from the new carmakers they have nurtured in the region. Malaysia's Proton has grown thanks to Mitsubishi; Timor of Indonesia is dependent on Korea's *Kia*; while *Samsung Motors*, Korea's latest market entrant, owes its skills to Nissan.

Yet in spite of their exposure, the outlook for the Japanese is not bleak. Some manufacturers plan to use the lower yen to boost exports to the US and Europe.

Korean carmakers, by contrast, are more exposed. Domestic demand has plunged more deeply than in Japan. Oversupply will be exacerbated by Samsung's debut as a carmaker in March. And, like the Japanese, the Koreans will be hit by weaker regional exports.

The country's carmakers are also exposed because of their heavy borrowing to finance new capacity in the region, either directly or through joint ventures. Many projects will now be scrapped or at least frozen. Hyundai's deal to build cars in Indonesia with Bimantara, controlled by one of President Suharto's sons, has been suspended.

The deal for Kia, the Korean brand rescued by the government last October, to supply cars and technology to Indonesia's Timor looks even less secure.

Timor is Indonesia's "national" car company, controlled by another presidential son. The company enjoys massive tax and tariff advantages over rival marques. This month, the Indonesian authorities announced those privileges would be rescinded under the reforms agreed with the International Monetary Fund.

Malaysia, which also has a "national" car programme, is similarly trimming its sails. Both Proton, the biggest of the "national" brands, and Perodua, its more recent counterpart, face big problems: both depend on the depressed home market, and neither has extensive exports.

For European and US carmakers, the crisis offers risks and opportunities. European luxury brands, notably Mercedes-Benz, but also BMW and Volvo, are most exposed. All have local assembly operations, now mostly lying idle.

By contrast, GM and Ford have focused on volume manufacturing. GM is backpedalling in Thailand and is unlikely to sanction growth at its smaller Indonesian plant. Ford says it remains commited to the Thai plant it has built with Mazda, the Japanese carmaker it controls. But executives are wary of further investments in the region.

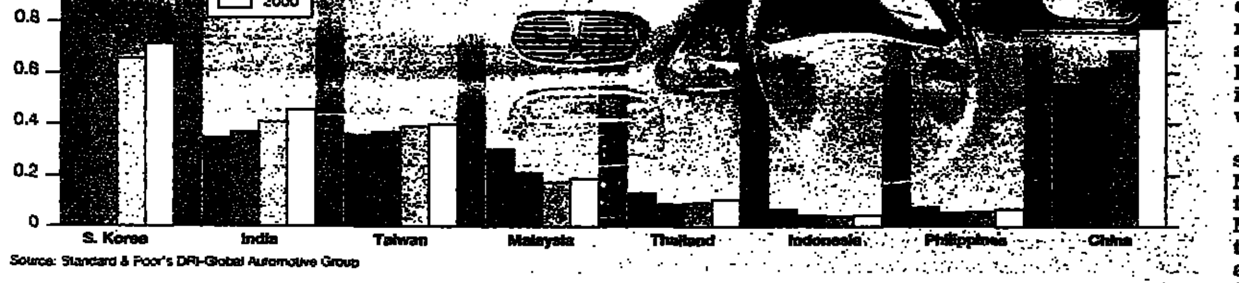
However, all the western manufacturers, including components companies, may be considering acquisitions among their weakened rivals in the region.

The first step was taken this week by GM, which agreed to enter talks on an alliance with Korea's Daewoo Motors. Ford has not denied it may be interested in Kia, in which it holds a sizeable stake, at the right price.

Haig Simonian

This is the fourth in a series on the effects of the Asian crisis. Previous articles appeared on January 27, January 28 and January 30

Braced for the impact



Source: Standard & Poor's DRI-Global Automotive Group

Turmoil fuels Proton's hopes

By Sheila McNulty in Shah Alam

When Mohd Saleh Sulong, chairman of Malaysia's *national carmaker Proton*, arrived at the island of Langkawi for a recent meeting, the local rental office was out of Protons.

None present dared be seen in the once obligatory Mercedes, given the authorities' rallying cry to support Malaysian business during the region's *financial crisis* and so the chairman was forced to borrow a Proton from one of the rental company staff to keep his own image intact.

Mr Saleh believes this resurgence of nationalism will serve Proton well. But even that, he admits, is not going to be enough to absorb all the shocks on the rough road ahead. Of all Asia's carmakers, Proton is one of the most vulnerable to the regional downturn.

The price of imported parts has been pushed up by the drop of more than 40 in the value of the ringgit against the US dollar.

But perhaps Proton's biggest obstacle is the sharp drop in domestic demand. There used to be a six-month waiting list to buy a Proton: now they can be obtained in a day.

This is largely because of difficulties getting financing as the authorities have discouraged lending to curb rapid credit growth as bad loans mount.

Even without financing difficulties, Mr Saleh says, *the economic slowdown* would reduce domestic car sales by 30 per cent this year. But if those difficulties persist, "there is no telling how far the drop will be".

Mr Saleh hopes that as consumers become more nationalistic and economical, buyers will increasingly choose Proton. The group has a big advantage over imports which carry duties as high as 350 per cent.

He expects Proton's domestic sales will drop this year from 195,000 last year to 148,000 units, but hopes exports will expand from 30,000 to 53,000.

If those sales targets are met, Proton expects to stay above break-even. To make sure, it has delayed building a M$5.75bn (US$1.39bn) plant and town, dubbed Proton City, frozen recruitment, ended overtime, reduced annual bonuses and frozen pay.

But even with these measures, Mr Saleh is unsure if Proton will have recovered sufficiently to withstand the breakdown of barriers to foreign competition as planned.

"I don't know whether, come the year 2003, we will be ready to open the market," he says.

Mitsubishi warns of deeper losses

By Michiyo Nakamoto in Tokyo

Mitsubishi Electric, one of Japan's five large integrated electronics companies, warned it would incur a larger loss than previously forecast because of deteriorating conditions in most of its main markets and a restructuring charge related to the closure of its US semiconductor and consumer electronics facilities.

The group revised its forecast for the year to March to a Y70bn ($552m) net loss rather than the Y10bn net loss previously forecast.

It will be Mitsubishi's first consolidated net loss and compares with a net profit of Y8.5bn last year.

Sales are also expected to be lower at Y3,800bn, rather than the Y4,000bn previously forecast, and the company has lowered its pretax forecast to a loss of Y40bn rather than a Y35bn profit.

The revision comes after Mitsubishi announced it would end semiconductor fabrication in the US by closing a line where it has been producing 4-megabit dynamic random access memory chips.

The move is believed to be the first time a Japanese semiconductor manufacturer has halted production overseas.

Mitsubishi is also withdrawing from the production of analogue television sets overseas and is closing a colour TV factory in the US. Another colour TV facility is also being closed in Japan.

The net loss of Y70bn, which includes the cost of restructuring its US semiconductor operations and its TV business, is larger than analysts had anticipated. The group will not make an operating profit this year.

Hiroshi Yoshihara, industry analyst at Salomon Brothers in Tokyo, warned that Mitsubishi's move to take much of the costs of restructuring in one swoop, did not mean its problems were behind it.

In order to make a pre-tax profit next fiscal year, Mitsubishi needs at least Y40bn to Y50bn in operating profits.

Given that it is probably incurring a loss of several tens of billions of yen in its semiconductor business, the company's return to the black depends substantially on the semiconductor market.

"There is still some uncertainty over the D-Ram market, so it is questionable whether the company has taken all the rot out," he said.

Mitsubishi said sales of its PCs were also depressed. Japanese consumer demand remained sluggish throughout the year after an increase in the consumption tax and financial turmoil.

A drop in air conditioner sales, pressure in audio-visual markets, which have suffered price declines, and sluggish cellular phone sales also damaged Mitsubishi's performance.

Philippine Seven tests IPO waters

Success could encourage others to take their plans off ice

Investors will be watching one small company on the Philippine Stock Exchange particularly closely today.

Philippine Seven Corporation, the local unit of the 7-Eleven convenience store chain, is due to break a nine-month duck in the initial public offer market with what appears to be fortunate timing.

The return of institutional investors to the region has helped the Manila market put on 21 per cent in the past week. However, analysts say it is too early to say whether the IPO is a genuine harbinger of good news.

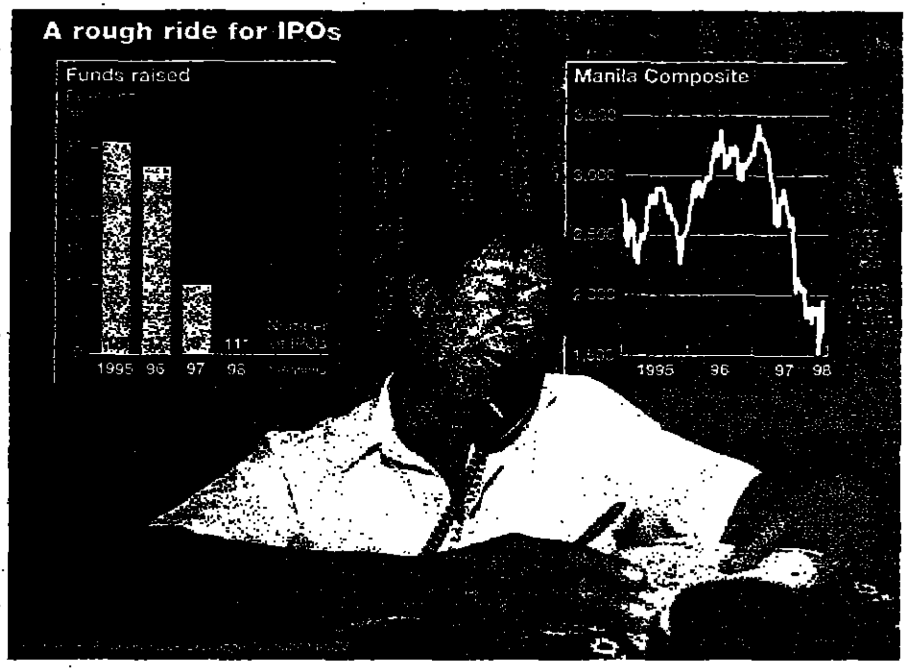
The company has not been immune from the effects of the Asian crisis. It had intended to raise up to 500m pesos ($12.2m) through the IPO, but that has been cut to 207m pesos with an additional 107m pesos coming from a private placement. At 4.4 pesos a share, the offering is 9.5 times forecast earnings for 1998, compared with the market p/e multiple of 12-14 times.

BPI Capital, the group's underwriter, is not expecting 1998 to be a vintage year for IPOs. "But brokers and underwriters are keenly awaiting Philippine Seven's performance," says Dennis Catalina, vice-president. "If it does well, it may rekindle interest."

Mr Catalina may be optimistic. Scan the list of the 10 local companies waiting to launch IPOs this year and there is one thing they have in common: none makes any mention of dates.

The absence of a clear timetable is a recognition of the brutal impact the regional currency and financial markets crisis has had on investor sentiment. Market uncertainty also reflects another, more fundamental, question mark over the country – presidential elections in May. Sustained recovery from the market slump and an accompanying revival of IPOs is now considered unlikely this side of the polls.

Teodoro Limcaoco, managing director of BZW in Manila, says: "You need foreign investors to come in, and local investors need to see that interest before they get in. With the regional turmoil and elections hanging over us, IPOs will just have to wait."



The road to raising capital on the stock market is strewn with such difficulties and the turmoil on foreign exchange markets has pushed banks' borrowing costs to prohibitively high levels – prime lending rates have doubled to 30 per cent since July. As a result, companies with fund-raising plans are caught in a vicious squeeze, say analysts.

After three years of breakneck loan growth, banks are bracing themselves for a sharp rise in non-performing loans. Analysts expect loan growth to be negligible this year, compared with 45 per cent in the second quarter last year and 24 per cent in the third. This and the continuing trend of high interest rates amid Asian currency turmoil mean some companies will struggle to access capital.

Late last year, Smart Communications, the country's leading cellular phone operator, announced it was deferring its IPO yet again because of unfavourable market conditions.

It originally intended to float more than a year ago and raise $300m. That has since been halved to $150m.

Smart is fortunate in having other options to raise funds. Its shareholders include Metro Pacific, the Philippine arm of Hong Kong-based First Pacific, and NTT, the Japanese telecoms carrier, which were prepared to inject $65m last summer and were subsequently called upon to raise an additional $45m.

Michael Lonergan, group chief financial consultant, says postponement has not hit the group operationally.

"The target of $300m was opportunistic because the market was buoyant and it would have given us a reserve fund to face consolidation in the industry," he says. "The point is we are not curtailing any planned expenditure as a result of the delay."

Hard on the heels of Smart's withdrawal came the deferral by Macondray, the holding company with interests in food, packaging and consumer finance, of its 1.5bn peso IPO. In September, Philippine Wireless, the paging company, also postponed plans to float and raise 1bn pesos.

The short-term outlook for Philippine companies is fairly bleak, say analysts. Soaring interest rates are expected to take their toll, particularly on the overheated property market.

A survey released this week by Makati Business Club showed those anticipating that interest rates this year would be higher than those in 1997 had risen from 84 per cent to 91 per cent. A handful of companies have already announced they are in difficulties with loan repayments and analysts say more will emerge as the economy turns down and consumer spending tapers off.

"The risk for IPOs now is excessive," says the head of research at a foreign brokerage. "Prudent companies will decide to defer until later in 1998 or 1999. It is very possible that Philippine Seven may be the only one to get off this year. But, when conditions are right, the floodgates will open. There are a lot of companies waiting out there."

Satellite television groups to merge

By Michiyo Nakamoto in Tokyo

JSkyB and PerfecTV, the Japanese digital satellite broadcasters, have agreed to merge in April.

JSkyB, whose main shareholders are News Corp, Sony, Softbank and Fuji TV, will be incorporated into PerfecTV, whose shareholders include trading companies Itochu, Sumitomo, Nissho Iwai and Mitsui.

Shareholders in JSkyB will receive one share of PerfecTV's stock for each share of JSkyB stock. Koya Mita, president of PerfecTV, will become president of the new company.

The agreement comes just weeks before JSkyB was set to launch services in April and a little over a year since PerfecTV's start. It highlights the pressures facing satellite multi-channel service providers in Japan. Although the market is growing – revenues rose 10.4 per cent to a record Y3,337.7bn ($26.3bn) in the year to March 1997 – the costs of setting up a multi-channel service are prohibitive.

There are already seven large terrestrial TV stations with wide penetration, two public satellite channels with 12m-13m subscribers and a third satellite film channel. Four more digital channels are expected to be launched by 2000, when terrestrial channels are also set to go digital.

The merger also represents a climb-down by Rupert Murdoch, News Corp chairman, who shocked the Japanese industry by announcing the launch of JSkyB and taking a stake in a Japanese broadcaster.

Analysts welcomed the deal. "Given that it takes 1.5m subscribers per service to make a profit, three platforms in the market would have been too many," noted Yusuke Hasegawa, an analyst at Nikko Research Center. The other provider is DirecTV, a subsidiary of the US company.

PerfecTV is believed to be heading for a pre-tax loss of about Y7bn this year, and had not been expected to make a profit on its own for another three or four years, Mr Hasegawa said.

Shougang advances despite oversupply

By James Harding in Shanghai

Shougang, one of China's largest steelmakers, announced a modest increase in profits last year in spite of tougher market conditions in China, where steady growth in production and slackening demand are depressing steel prices.

The company, known formally as Capital Iron and Steel, recorded profits of Yn350m ($42.3m) last year, up 7.9 per cent on 1996 profits of just over Yn324m. Sales were Yn36.4bn, according to a statement in the official state media. No comparative figure was given.

Steel companies in China faced a more difficult operating environment over the past year as slower-than-expected growth in the vehicle and construction sectors damped consumption growth just as steel supply increased and energy costs rose.

Yesterday's report in the China Daily, the government-run newspaper, said the performance came "at a time when the price of domestic steel kept plunging and energy costs increased by a large margin".

Shougang calculated that the fall in steel prices over the year shaved Yn150m off final profits, and the increase in energy costs in production cut profits by a further Yn304m.

Luo Bingsheng, president, attributed the profits growth to capital restructuring, diversification and cost savings. Efficiency measures have cut the Shougang workforce by 185,000 in the past two years, according to the report.

Mr Luo said Shougang would focus on "new value-added products in the years to come", after technological upgrades lifted sales by Yn330m.

The company gave no figure for the decline in steel prices in China, the largest steel-producing country in the world, but output is continuing to grow, with national steel production last year at 107.6m tonnes.

Analysts in China said that steel prices fell by more than 10 per cent in 1997 and were expected to fall further this year; the government forecast that domestic supply would continue to outstrip demand in 1998.

Shougang is China's fourth largest steelmaker behind Baoshan Steel, Handan Steel and Wuhan Steel. It has listed a subsidiary in Hong Kong and is awaiting approval for a more substantial offering on one of China's mainland stock markets.

The Chinese steel industry reported total profits of Yn2.3bn for 1997, but the figures mask heavy losses and widespread inefficiencies in the hundreds of small and medium-sized steel businesses.

China's steel industry employs roughly 3m people, but output per worker is low by international standards.

ASIA-PACIFIC NEWS DIGEST

San Miguel raises prices

San Miguel, the Philippine food and beverage group, yesterday announced an average 9 per cent rise in the price of its core beer brands to compensate for the weaker peso. The new prices "will help soften the impact of higher costs on the company, primarily of imported raw materials for brewing beer", the group said. The peso has fallen to a low of 46.55 pesos to the dollar, compared with 26.4 pesos to the dollar before the currency crisis swept Manila last July. Bienvenido Bautista, president, said San Miguel was still absorbing much of the increase in costs.

Rachel Regala, analyst at Indosuez W. I. Carr, forecast a decline in net income for 1998 to 2bn pesos. A further price rise this year was likely, she added.

B shares in the group fell 1.5 pesos to 57 pesos, following the news on Monday that First Pacific, the Hong Kong-based conglomerate, had ceased talks aimed at a takeover of the group. *Justin Marozzi, Manila*

■ THAILAND

SE suspends two bank stocks

The Thai stock exchange suspended trading in shares of First Bangkok City Bank and Siam Commercial Bank yesterday morning in what appeared to be a signal that the central bank was close to taking them over. Both mid-sized banks appear to be struggling to find the fresh capital that the Bank of Thailand has demanded.

Citibank, which is in talks to buy a majority stake in FBCB, recently said its due diligence would not be completed until the end of April.

Brokers estimated that FBCB may owe the central bank Bt100bn ($1.96bn), or 35 per cent of its total funding. Gerard Kruithof, banking analyst at Deutsche Morgan Grenfell in Bangkok, estimated that the Bank of Thailand may have extended a total of Bt250bn to the 15 commercial banks. *William Barnes, Bangkok*

■ OIL

Nippon Oil to build new refinery

Nippon Oil, Japan's largest oil refiner and distributor, is to invest Y35bn ($276m) in new refining facilities at its Muroran plant in the northern island of Hokkaido. Work will start next month and is due to be completed by late 1999. The Muroran plant, one of Nippon Oil's largest sites, is also to be the location of one of three electricity generating plants which the group is building as part of its move into the independent power generating sector.

Nippon Oil is carrying out a cost-cutting and streamlining programme, including staff cuts and some rationalisation of its refining capacity. The company announced last year that it was to close its smallest refinery, in Niigata province, in March 1999. *Bethan Hutton, Tokyo*

■ PHILIPPINES

FEBT moves 20% ahead

Far East Bank & Trust, the fifth largest commercial bank in the Philippines, yesterday reported a 20 per cent rise in 1997 net income to 2.72bn pesos ($66m). Total assets rose 27 per cent to 157.2bn pesos as deposits grew 23 per cent. Loan growth grew 16 per cent. The bank did not provide details of interest income.

The bank, which had targeted growth of 30 per cent, said it had raised its loan loss provision from 1bn pesos to 2.4bn pesos. This would protect it from market uncertainties and ensure it met the central bank's new 2 per cent loan reserve requirements before the October deadline.

ING Barings forecast earnings would decline 15 per cent this year because of higher provisioning. "Despite its fairly rigid credit policies, the bank is nonetheless vulnerable to bad debt problems," the broker said in its latest report, predicting non-performing loans would peak at about 8 per cent. The bank is well capitalised, however, following a 10-year $75m loan from the World Bank's International Finance Corporation last year and a 2.5bn pesos rights issue in 1996. *Justin Marozzi*

■ VIETNAM

Yamaha gets motorcycle go-ahead

Yamaha said it had received approval from the Vietnam government to establish a motorcycle production venture in Vietnam. The Japanese group would hold a 46 per cent stake in the venture, Hong Leong Industries 24 per cent, Co Do Mechanical Factory 22 per cent and Vietnam Forest Corp 8 per cent, it said. Hong Leong Industries is the investment company of Hong Leong Yamaha Motor, Yamaha's Malaysian motorcycle manufacturing joint venture.

It said production in the first year of operation, 1999, was planned at 8,000 units of mainly 100cc and 110cc moped-type motorcycles. Production would be raised to 15,000 units by 2000, rising further to 100,000 units annually by 2005. *AFX-Asia, Tokyo*

Matsui halves broking commission

By Gillian Tett in Tokyo

Matsui Securities, one of Japan's small brokers, announced yesterday that it would cut its brokerage commissions by 50 per cent when the government lifts most controls in the sector on April 1.

The move represents the first salvo in what is expected to become a bitter battle between Japan's brokerages later this year.

The deregulation of commissions is expected to be one of the main planks of the "Big Bang" financial deregulation that the government is planning for the Japanese markets.

Until now brokerage commissions on deals of less than Y1bn ($7.9m) have been fixed in Japan, guaranteeing a hefty source of income for the country's 300-strong securities firms.

This spring the government will let brokers charge whatever commission they wish on deals over Y50m. In 1999, fixed commissions will be abolished on all deals.

Analysts had expected that this would result in commissions falling by between 30 and 40 per cent. However, with the market becoming more competitive, some expect even larger falls in the commission levels.

The move will increase pressure on the sector, where over recent years two large brokers and several small ones have already closed.

The sector has been badly hit by falling stock market volumes, growing foreign competition and corruption scandals.

Paul Heaton, of Deutsche Morgan Grenfell, said: "We expect this move will be followed by other brokers and lead to a shake-out of the marginal brokers."

Matsui, a small unlisted broker with a reputation for being innovative, became the first to cut commissions on OTC transactions last spring – a move which was widely copied elsewhere in the sector.

The group, which has only 20,000 accounts, does not compete in the institutional market but it is thought to have plans to enter this sector after Big Bang.

It recorded a pre-tax profit of Y603m in the year to March 1997, in sharp contrast to many other small brokers which recorded losses.

Alphatec plans debt restructuring

By William Barnes in Bangkok

Alphatec Electronics, the Thai electronics company, said yesterday that creditors had been asked to approve by March 2 a restructuring plan for some $330m in debt.

The computer chip company refused to divulge details of the scheme, but said it involved an equity purchase by an unnamed company. Robert Mollerstuen, chief executive, said the plan required creditors to be patient.

Jan Cherim, an executive of ING Bank and head of the creditors' steering committee, said: "We certainly support the proposal." Another creditors' representative, Michael Dunlaevy of Bankers Trust, said: "The way in which the recovery of the existing debt can best be achieved is by facilitating the company's growth in the future."

Alphatec said it had received a letter from Charn Uswachoke, founder and former chief executive, which promised to return money removed from the company.

Mr Charn said in August 1996 that he intended Alphatec to become the world's biggest integrated semiconductor producer by 2000. But the attempt to lead Thailand into cutting-edge manufacturing received a blow last year when a Price Waterhouse audit uncovered a total of Bt4.1bn ($80.5m) of fake profits that had been used to dress up three years of falsified financial statements.

The audit also concluded that the company had channelled Bt3.95bn in unauthorised payments to "related persons" with ties to Mr Charn. Officials will not reveal if any of this money has yet been returned.

Sales suffered because customers held off making orders until the group's future was secure, according to Mr Mollerstuen. The result is that Alphatec has been operating with a negative cash flow that has caused the baht-denominated debt to expand. Nevertheless, the halving in value of the baht since last July's flotation of the currency has trimmed debt from $450m to $330m in dollar terms.

Alphatec reported on Monday a third-quarter net loss of Bt788.9m compared with a Bt84.8m profit a year earlier. Losses for the nine months were Bt12.26bn, compared with profits of Bt401.3m. Alphatec shares were suspended last June.

Interim profits will be hit by sugar beet disease and commissioning costs of French plant

Tate & Lyle shares tumble on warning

By David Blackwell

Shares in Tate & Lyle tumbled yesterday as the sugar and starch group warned that disease sweeping the sugar beet fields of Nebraska would knock $20m from profits.

The shares fell 7½ per cent to close at 507p after the annual meeting was also warned of higher commissioning costs at the group's 66 per cent-owned Amylum starch plant in France and the continued effect of sterling's strength. First-half profits before exceptionals will be similar to last year's £113.6m.

Analysts reduced forecasts for full-year profits by up to £20m ($33.4m), leaving expectations for the year to September 30 at £240m. "This must be seen as a further disappointment for people who were expecting a reasonable recovery in profits this year," said Carl Short of SG Securities.

News of the sugar beet disease was particularly disappointing given yesterday's indication of progress at Staley, the US starch business. Tate said the market for high fructose corn syrup – used to sweeten soft drinks – had remained competitive, but further progress had been made in extending into higher value-added starch products.

"We were expecting a bullish statement following improvements at Staley – but that was more than offset by the sugar problem and Amylum," said one analyst.

The group said the disease afflicting its US sugar beet was spread by an air-borne virus which was usually killed off by the autumn frosts. It would limit production, which had been expected to rise 10 per cent, to last year's levels.

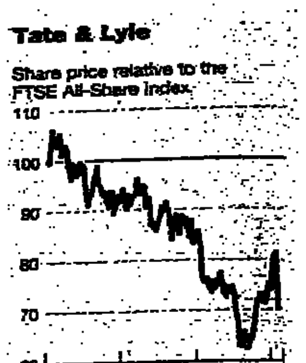
Tate's pre-tax profits peaked at £311m in 1994-95. In November the group reported a fall in pre-tax profits for the year to September 30 from £276.3m to £241.3m, before exceptional charges of £82m announced at the interim stage but after a £38m currency hit.

Analysts suggested that profits for 1998-99 would benefit from the investment in Staley and Amylum, but were still unlikely to be much more than £300m. However, they said that the high operational gearing of both those businesses made projections extremely sensitive to commodity markets.

The board has accepted the request by Sir Neil Shaw, chairman since 1986, to retire in this financial year. Sir Neil, 68, signalled his intention to leave some time ago. His successor has yet to be announced.

LEX COMMENT

Tate & Lyle



For a few months late last year, it looked as though Tate & Lyle might have changed its spots. After underperforming the UK market by 40 per cent since the start of 1995, the group at last seemed set to harvest the fruits of business *rationalisation* and heavy capital spending. Yesterday that crop of hope was damaged. Tate's recovery has been postponed and, unless the management is galvanised, the longer-term outlook again looks uncertain. The humdrum part of the warning was a reminder of the commodity-oriented group's vulnerability to external shocks: this time sugar beet disease. More worrying are the continued delays and cost overruns in commissioning a factory in France. This is something the management should have been able to control. The project is part of a $500m capital spending project that is supposed to have a return of 20 per cent. But full benefits are not expected until 2000 – jam the day after tomorrow.

Another question is whether margins can be rebuilt at Staley, the US high fructose corn syrup business. The familiar picture is one of management efforts – to move into higher value products – being hostage to price movements at the commodity end. Such vulnerability easily justifies the group's near 20 per cent discount to the market. If Tate wants to make more of its own luck, it should take the opportunity of Sir Neil Shaw's retirement to appoint a strong independent chairman to help light a fire under those parts within management control.

PacifiCorp rejoins Energy chase

Fred Buckman, left, with Derek Bonham, chairman of Energy Group: analysts say new bid is not a knock-out blow

By Virginia Marsh and Simon Davies

PacifiCorp yesterday threw down the gauntlet to its potential rivals for the hand of Energy Group, announcing a new recommended offer valuing the UK-based power and coal group at £4.05bn ($6.76bn).

The offer, at 765p a share, is 11 per cent more than the US electricity group agreed to pay last summer before its original £3.65bn bid, at 690p a share, was thwarted by regulators.

Price expectations for Energy Group – which spans Eastern in the UK and Peabody, the US coal group – rose sharply last week after both Nomura, the Japanese bank, through its principal finance group, and Texas Utilities, said they were considering bidding.

However, while analysts still believe the US electricity group has the best chance of winning Energy Group, they said the new bid was far from a "knock-out blow".

Within an hour of PacifiCorp's announcement, Texas said it was still in discussions with Energy Group.

Nomura declined to comment. But it is understood the group is still taking actuarial advice on potential liabilities at Peabody including payments to miners suffering from black lung disease.

Sources said Nomura had not given up on the possibility of out-bidding PacifiCorp.

Fred Buckman, PacifiCorp president, said the Oregon-based group had hoped to have full regulatory approval before rebidding but had accelerated its plans to press its advantage over its rivals.

Analysts believe a bid from Nomura would almost certainly be referred to the UK's Mergers and Monopolies Commission while Texas would need at least several weeks to secure regulatory approval.

PacifiCorp, was given clearance to rebid by the UK authorities in December and said yesterday it had reached an informal agreement with the main US regulator. It has agreed that, if its bid is accepted, it will sell two Peabody coal mines.

Mr Buckman said PacifiCorp – which has already spent over $100m on the bid – was prepared to pay more for Energy Group than last year, mainly because its cost of capital had fallen.

PacifiCorp, which is being advised by Goldman Sachs, would finance its offer from $1.8bn cash – it has sold off assets worth about $2bn since its first bid – with the balance coming from debt. Its original offer would all have been financed from debt.

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GUS in hostile bid for Argos

By Peggy Hollinger

Argos, the catalogue retailer which has issued three profits warnings in just over a year, was yesterday put into play with a hostile £1.6bn ($2.67bn) cash bid by Great Universal Stores.

The bid was rejected almost immediately by Argos, which said it failed to recognise the strategic value of the company, its track record or its prospects.

Analysts speculated that Argos would now seek a white knight from abroad, such as Otto Versand of Germany or Pinault Printemps of France, which are known to be interested in entering the UK mail order market.

Lord Wolfson of Sunningdale, GUS chairman, said yesterday he believed his offer of 570p a share was a "full and fair price", given the steady decline in the share price over the last year from a high of 772p.

Lord Wolfson said he believed GUS could offer substantial benefits to Argos. "It brings quickly and economically the home shopping call centre and delivery infrastructure which Argos's recent trading statement identified it would build," he said.

Lord Wolfson denied that if successful, he had any intention of phasing out Argos's high street chain.

Meanwhile, GUS's mail order rivals were calling on the Office of Fair Trading to refer the proposed acquisition to the Monopolies and Mergers Commission.

Although GUS would have net debt for the first time in more than 40 years, both businesses were highly cash generative. Interest cover would still be comfortable at between 7 and 9 times, said one analyst.

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UK ministers 'relaxed' on drugs deal

Brussels will have final say on competition effects of SB's proposed merger with Glaxo

By Daniel Green, Andrew Bolger and David Wighton

Senior UK ministers are understood to be relaxed about the proposed merger between Glaxo Wellcome and SmithKline Beecham to create the world's largest pharmaceutical group, capitalised at £100bn ($163bn).

They say the deal should be judged on competition grounds, with Brussels left to determine whether there are any problems in particular markets.

"The issue of jobs is something that can be left to the market," said one senior government member.

Competition authorities in Brussels will not look at the deal until after it is finalised. Glaxo and SmithKline are hoping to complete it by February 17, when SmithKline is scheduled to publish annual results for 1997.

Both Jan Leschly, SmithKline's chief executive, and Sir Richard Sykes, Glaxo's chairman, are in regular contact with ministers.

Sir Richard and Mr Leschly met face-to-face in London yesterday to start detailed talks on merging the companies.

The talks coincided with mounting union protests over likely job cuts and apparent government acceptance of the principle of the deal, which would be the biggest in corporate history.

However, MSF, the white-collar union, yesterday deplored the failure of Glaxo and SmithKline to consult trade unions about the proposed merger, which employees fear could lead to thousands of redundancies.

The two companies employ about 21,000 in the UK. In previous mergers, roughly 10 per cent of the total workforce was cut, but with a higher proportion in companies' home countries.

Roger Lyons, general secretary of MSF, said: "It is a shocking situation. In a democratic society – where people have the right to vote for the government that they want – employees are being treated in this medieval way, no better than serfs."

MSF, which represents about 5,000 employees involved in the proposed deal, also warned it would take legal action if the companies decided on closures or redundancies without first consulting the unions, as required under the European directive on collective redundancy.

Mr Lyons said the Takeover Panel had clarified recently with the union that companies were not prevented by merger rules from consulting unions on the employment consequences of any merger.

"For too long companies involved in mergers have claimed they could not consult employees due to stock exchange rules," said Mr Lyons. "Companies will now have to accept their legal obligations to consult union representatives on the employment implications of takeovers and mergers."

Alistair Defriez, director general of the Takeover Panel, has written to all members of the panel, with a view to ensuring that "any misunderstandings are corrected regarding the application of the code in the circumstances where obligations to inform and consult employees exist."

However, the panel later emphasised there had been no change to takeover regulations. It had merely confirmed that nothing in the code was intended to be regarded as over-riding legal obligations that employers might have under European or UK employment legislation, or other obligations, such as collective agreements with unions.

MSF said yesterday it was mainly concerned by the potential threat to employment and to the British scientific base from the proposed merger of the two companies, which between them accounted for 20 per cent of all the UK's private sector spending on research and development.

Most of the companies' R&D staff are employes at two recently completed centres.

Mr Lyons said MSF was not opposed in principle to the proposed deal. "It is just that the case for the merger has not yet been made," he said.

Option holders at Henderson to receive £8m

By Jane Martinson, Investment Correspondent

Option holders at Henderson are set to gain about £8m ($13.4m) from yesterday's recommended cash offer for one of the last remaining independent UK-listed fund managers from AMP, Australia's largest life assurer and investment group.

The deal values Henderson at £382m, including £19m for the purchase of 1.2m outstanding options. Henderson said the options were held by about 100 employees, including senior fund managers as well as directors.

Analysts were surprised at the level of options, which some had not used to dilute earnings. The deal values each share at £16.45, including a 45p interim dividend payment, slightly below the £16.50 price indicated in an earlier statement.

The shares fell 42½p to £16.22½. One analyst said the price, at 2.6 times assets under management, failed to reflect the fact that Henderson was expected to benefit from better investment performance this year.

However, an adviser to Henderson said the "very high price reflected the excellent fit" between the two businesses.

AMP and Henderson said the tie-up would lead to cost savings and operational synergies. About 10 per cent of the combined group's workforce, which numbers more than 900, is set to be cut.

The merger combines AMP's existing UK asset management operations – worth about £25bn – with the £14.3bn managed by Henderson. The deal brings total assets under management at AMP, which is set to float later this year, to £63bn.

Dugald Eadie, Henderson's managing director who is set to realise about £1m from the deal, will head the merged business under the Henderson name. Tony Watson, managing director of AMP's UK arm, will report to Mr Eadie. Ben Wrey, who should receive £2.5m from his stake, will remain Henderson chairman.

Henderson was advised by Baring Brothers and Cazenove while AMP was advised by DLJ Phoenix.

Prices for electricity determined for the purposes of the electricity pooling and settlement arrangements in England and Wales.

½ hour period ending	Provisional Price for Trading on 04.02.98 Pool purchase price £/MWh	Final Prices for Trading on 27.01.98 Pool purchase price £/MWh	Pool selling price £/MWh	TS use of system price £/MWh
0030	38.00	54.04	54.34	0.82
0100	32.46	54.04	54.34	0.82
0130	32.46	99.09	99.39	0.82
0200	32.46	99.09	99.39	0.82
0230	32.46	25.99	26.29	0.82
0300	32.46	25.99	26.29	0.82
0330	32.46	25.99	26.29	0.82
0400	32.46	25.99	26.29	0.82
0430	32.46	25.99	26.29	0.82
0500	32.46	25.99	26.29	0.82
0530	21.28	15.05	15.05	0.00
0600	21.28	15.06	15.06	0.00
0630	11.80	27.21	27.51	0.82
0700	37.08	30.84	31.14	0.82
0730	38.24	35.72	36.03	0.82
0800	37.27	37.28	37.58	0.82
0830	45.44	38.08	38.39	0.82
0900	45.52	43.08	43.38	0.82
0930	63.98	39.20	39.65	0.82
1000	54.02	58.06	58.42	0.82
1030	53.97	58.07	58.43	0.82
1100	53.90	45.29	45.65	0.82
1130	47.10	45.37	45.68	0.82
1200	47.08	45.33	45.69	0.82
1230	47.04	45.29	45.64	0.82
1300	47.01	45.24	45.58	0.82
1330	37.24	45.18	45.50	0.82
1400	37.24	39.10	39.42	0.82
1430	37.23	39.10	39.42	0.82
1500	37.23	39.11	39.43	0.82
1530	37.24	39.13	39.45	0.82
1600	37.27	39.35	39.75	0.82
1630	44.68	57.80	59.08	0.82
1700	49.19	62.86	67.42	0.82
1730	65.79	112.29	117.60	0.82
1800	108.87	111.38	118.46	0.82
1830	102.66	91.44	94.04	0.82
1900	61.21	57.53	58.65	0.82
1930	52.87	47.88	48.46	0.82
2000	43.52	47.10	47.45	0.82
2030	44.29	36.08	36.38	0.82
2100	37.22	35.04	36.34	0.82
2130	36.21	35.83	36.13	0.82
2200	36.21	32.60	32.90	0.82
2230	35.88	30.84	31.14	0.82
2300	30.15	27.81	28.12	0.82
2330	16.75	27.81	28.12	0.82
2400	11.80	26.42	26.72	0.82

Prices are determined for every half-hour in each twenty-four hour period. Prices are in pounds per megawatt-hour, rounded to two decimal places. To convert prices to pence per kilowatt-hour the decimal point should be moved one place to the left, eg £16.86/MWh becomes 1.686p/kWh. Provision for the determination of pool prices is made in the Pooling and Settlement Agreement which governs the operation of the electricity pool in England and Wales. The Pool Purchase Price is the basis of the majority of payments made to generators in respect of electricity traded through the pool. The calculation of pool prices is a highly complex process the product of which is subject to revision or correction (and sometimes major alterations) until final pool prices are determined approximately twenty-four days after the day of trading. Accordingly due to the possibility of their revision and/or correction, no reliance should be placed upon provisional pool prices for any day being the same as final pool prices for that day. Final pool prices are also capable of revision. The Transmission Services Use of System Price (TSP) is charged by the National Grid Company plc (NGC) for the operation and development of its electricity transmission system for the purpose of optimising the costs arising from the operation of that system. Charges are calculated by NGC and are based on payments made by NGC into the pool. TSP is also capable of revision. Pool Selling Price is the price paid by purchasers of electricity under the pool trading arrangements. It is dependent upon the determination of Pool Purchase Price. Further information on pool prices is provided on behalf of the Pool and on TSP on behalf of NGC by Energy Settlements and Information Services Limited. Anyone wishing to receive such information should telephone 0115 945 8789 between 8.30am and 5.15pm Monday to Friday.
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BSkyB to sue Carlton for £30m

By John Gapper and Cathy Newman

British Sky Broadcasting is suing Carlton Communications over a £30m ($50m) payment Carlton has refused to make until BSkyB secures fresh rights to Premier League soccer.

The row concerns soccer coverage on British Digital Broadcasting (BDB), the 15-channel pay television venture owned by Carlton and Granada Group, which is due to be launched this autumn.

BSkyB's move came after Granada agreed to pay its half of a £60m programming fee to BSkyB. Carlton has held back its payment until BSkyB secures terrestrial digital rights to show Premier League football on its Sky Sports channel.

It emerged yesterday that BDB has the right not to carry the Sky Sports One channel if BSkyB fails to gain Premier League rights. However, Carlton said BSkyB had made "virtually no progress" towards the rights despite repeated promises.

The dispute coincided with BSkyB's announcement of results for the six months to December 31. As expected by analysts, profits were depressed by the cost of preparing for the launch of digital television, on which it has spent £100m.

Profits before tax dropped to £128.6m (£133.7m) as a result of higher interest charges and investment in ventures such as British Interactive Broadcasting.

The number of subscribers failing to renew subscriptions – the "churn" rate – rose from 9.5 per cent to 15.4 per cent. That was partly due to a rise in the cost of premium sports and movie channels.

Zeneca gains patent extension

By Jonathan Guthrie

Zeneca, the pharmaceuticals company, has won an extension to rights to exploit its Diprivan anaesthetic in the US. It has been granted a patent until 2015 for a new formulation designed to reduce the risk of accidental contamination of the drug.

Diprivan, launched in 1986, is now the world's dominant anaesthetic administered by injection. It was Zeneca's third highest-ranking drug by sales in 1996, with worldwide turnover of £349m ($583m) and US sales of $250m

Zeneca's original US patent expired in May 1996. But manufacturers of generic drugs could not start making copycat products because the Federal Drugs Administration had granted it exclusive use of information on the formulation until June 1999.

The FDA also ruled that any drugs using Diprivan's active ingredient, propophol, should contain the anti-contaminant sodium edetate. This was in response to cases of contamination of Diprivan vials mishandled by healthcare workers. Because Zeneca's revised formula for Diprivan – the subject of the new US patent – uses disodium edetate, the company believes it is safe from incursions from generic drug manufacturers for another 17 years.

Diprivan has already lost patent cover in some European countries, and UK, Belgian and Irish patents expire in 2000.

The shares fell 88p to £25.97. Tim Franklin of Greig Middleton, the broker, said: "The news we are waiting for is on new products, but no launches are expected for the next three years."

RESULTS

		Turnover (£m)		Pre-tax profit (£m)		EPS (p)		Dividends: Current payment (p)	Date of payment	Corresponding dividend	Total for year	Total last year
BSkyB	6 mths to Dec 31	891.8	(577.4)	128.6	(133.7)	6.8	(7.1)	2.75	Apr 3	2.75	-	6
Bryant	6 mths to Nov 30	260.2	(257.2)	21.3	(15.4)	5.2	(3.7)	1.45	Apr 16	1.45	-	5.05
Energy Group	9 mths to Dec 31	3,390	(3,084✗)	259♠	(-)	15.7#	(-)	-	-	-	-	-
Fitness First Φ	Yr to Oct 31	5.69	(3.71)	1.33	(0.727)	4.36†	(2.55)	-	-	-	-	-
GEO Interactive Φ$	Yr to Dec 31	3.06	(1.38)	9.86L	(1.08L)	10L†	(1L)	-	-	-	-	-
Henderson	9 mths to Dec 31	63.8	(55.8)	16.1♠	(15.9)	51.91	(49.56)	‡	-	-	-	45
Heritage Bathrooms	6 mths to Nov 30	11.2	(9.48)	2.45	(1.98)	9.4	(7.4)	2.6	Apr 2	2.2	-	6.4
Mondas Φ	6 mths to Oct 31	0.143	(0.011)	0.251L	(0.105L)	4.1L†	(5.4L)	-	-	-	-	-
Range Cooker Φ	6 mths to Oct 31	3.76	(2.27)	1.06	(0.292)	0.69	(0.21)	-	-	-	-	-
Stoves	6 mths to Nov 30	42.6	(39.8)	2.83	(2.37)	7.6	(6.3)	2.2	Apr 8	2	-	5.8
Tadpole Technology	Yr to Sept 30	13.4	(24)	3.52L♠	(4.39L)	10.3L	(16.8L)	-	-	-	-	-

Investment Trusts		NAV (p)		Attributable Earnings (£m)		EPS (p)		Current payment (p)	Date of payment	Corresponding dividend	Total for year	Total last year
Continental Assets	Yr to Dec 31	276.27	(245.27)	0.499	(0.694)	2.05†	(2.95)	2	Apr 10	3	2	3
Gartmore British	Yr to Dec 31	146.2	(107.8)	1.9	(1.85)	9.25	(9.03)	2.25	Feb 28	2.1	9	8.4
Gartmore Fledgling	12 mths to Dec 31☆	120.2	(115.5)	0.567	(0.694)	1.59	(1.95)	0.4§	Mar 27	1	-	1.6
St Andrew	Yr to Dec 31	422.1	(398.5)	3.51	(3.31)	10.22	(9.63)	7大	May 7	6.5	10.2	9.5

Earnings shown basic. Dividends shown net. Figures in brackets are for corresponding period. ♠After exceptional charge. ♥After exceptional credit. †On increased capital. ✗Pro forma. #Includes windfall tax. ΦAim stock. $US currency. ‡Second interim of 45p indicated if offer from AMP is declared unconditional in all respects. ☆Current period covers 18 months to June 30. §Second interim; makes 0.8p to date. 大Includes foreign income dividend element.

BUSINESS AND THE ENVIRONMENT

Renewable sources work but most governments continue to ignore them, writes Michael Peel

Energy quest yields hot air

Looking out over the barren volcanic landscape of Lanzarote, the eye is drawn to the wind turbines planted like lines of crucifixes on the hills.

When a fresh breeze blows in from the Atlantic, the generators' spinning blades demonstrate the vast potential of wind to help solve the problem of the world's reliance on fossil fuels.

On calmer days, however, the idle rotors are a reminder that attempts to generate energy from sustainable sources can sometimes remain at the mercy of nature's unpredictability.

That contrast sums up the difficulties faced by those who seek to promote renewable energy sources. The tension was evident last month at a conference in the Canary Islands.

Supporters of renewables have shown that significant energy can be generated by wind, waves, rivers and the sun. Renewable sources account for more than a quarter of the energy needs of some European countries. But there is uncertainty about the long-term cost-effectiveness of methods of renewable energy generation, which require big capital investments. And it is hard to predict the effect of a significant increase in renewable energy on employment in the energy generation industry.

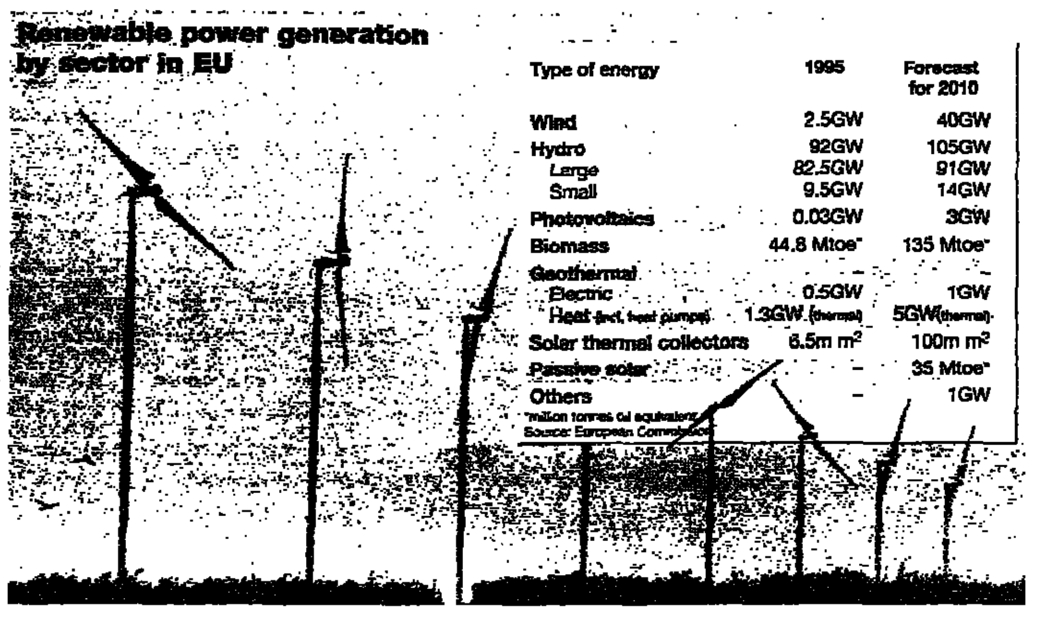
These issues must be resolved soon, for there has never been greater pressure at a European level for national governments to switch from using oil, gas and coal. There is strong evidence that burning fossil fuels contributes to global warming. Before the Kyoto climate conference in December last year the European Commission was looking to cut emissions of greenhouse gases in the EU by 15 per cent by 2010.

A European Commission white paper last year argued that member states urgently needed to draw on renewable energies to meet that target. In 1995 renewable energy accounted for less than 6 per cent of total energy demand in the EU, according to Eurostat, the EU's statistical agency. There were substantial variations between countries, from Sweden's 25.4 per cent to the UK's 0.7 per cent.

The commission set a target of a 12 per cent share for sustainable energy resources by 2010. Earlier last year, the European parliament voted to aim for 15 per cent over the same time-span. Neither target is legally binding on member states.

The paper estimated that doubling the share of energy from renewables would require an increase in total energy investment of 30 per cent, or Ecu74.1bn (£49bn). EU countries would save Ecu21bn in fuel costs between 1997 and 2010.

The paper predicted that the growth in renewables would result in an EU export business of Ecu17bn by 2010. It also quoted a commission-funded study which predicted that the shift towards renewables would result in a net increase of 500,000 jobs once indirect employment was taken into account.



Renewable power generation by sector in EU

Type of energy	1995	Forecast for 2010
Wind	2.5GW	40GW
Hydro	92GW	105GW
Large	82.5GW	91GW
Small	9.5GW	14GW
Photovoltaics	0.03GW	3GW
Biomass	44.8 Mtoe*	135 Mtoe*
Geothermal		
Electric	0.5GW	1GW
Heat (incl. heat pumps)	1.3GW (thermal)	5GW (thermal)
Solar thermal collectors	6.5m m^2	100m m^2
Passive solar	-	35 Mtoe*
Others	-	1GW

*million tonnes oil equivalent
Source: European Commission

Some governments remain cautious about proceeding with large investments based on predictions made using computer models and estimates. John Gummer, former UK secretary of state for the environment, says: "It is an area that is moving very quickly and one in which governments can lose a lot of money if they go about it the wrong way."

Governments have held back for other reasons, such as concerns about the effects that renewable energy installations have on the environment.

Some hydro-electric stations are unpopular with the public because they are seen as spoiling areas of natural beauty. Wind farms are opposed because the noise of the turbines disturbs people who live nearby.

These developments are not well-suited to densely populated countries, as one UK delegate pointed out. Looking over the wastelands of lava outside Arrecife, Lanzarote's capital, she observed that they were "perfect for putting renewables on. They don't complain."

Tradition also influences government attitudes. Christiane Egger, from Austria, said the government had always placed strong emphasis on alternative energy. She said Austria never developed a nuclear industry or a coal industry. The country's main power producers wielded little influence.

Some governments have been opposed by powerful interests in the power generation industry. One Spanish delegate said: "We still have a great deal to do in that field... We have not made the necessary efforts to inform or link with these companies."

There were few signs at the conference that links were being forged with power generators. There were no delegates from large power producers or distributors. Carlos Robles Piquer, president of Eufores, the lobby group which organised the conference, admitted: "We are maybe preaching the gospel to people who already believe in the gospel."

Many delegates were disappointed at the lack of debate about the potential economic and social impact of renewable energy in Europe. There were few challenges to the claims made about the projected benefits of renewable energy.

Eryl McNally, a UK MEP and vice-president of Eufores, said dissenting voices might have stimulated debate.

Many delegates acknowledged that the conference did little more than review established research and concepts. Most speakers, with tight time limits, dealt in broad terms with well-known themes. Many delegates spoke hopefully of big potential markets for renewable energies in developing countries looking to become self-sufficient. But no one offered case studies or research in support.

Few delegates seemed hopeful of a swift breakthrough. Only a handful of national government ministers attended the conference. Many delegates spoke of frustration that renewable energy technologies which had been developed years ago had not been widely adopted. Many felt progress would only be made if organisations such as Eufores campaigned much more strongly to persuade governments to encourage the use of renewable energy sources. As Hjálmar Arnason, a member of the Icelandic parliament, put it: "There have been so many meetings in the past 10 years or so. Many beautiful words have been said. We always come to the same conclusion – we must do something. But what has that come to?"

Viewpoint • Michael Grubb

Bring renewables into the EU land debate

The renewable energy sources that can help meet the European Union's commitments on climate change could also help address some of its most intractable policy problems – including the Common Agricultural Policy, which is about to undergo further heavy reform.

Like agriculture, renewable energy is about harnessing the combined resources of Europe's sun, land and people. The most obviously relevant technology is biomass energy – growing plants to produce useful energy when harvested.

The processes that take existing agricultural crops (like corn and rapeseed) and convert them to liquid fuels have given biomass energy a bad name. But more appropriate crops and processes – including coppiced forests that are harvested for power generation – are both more economic and can be made more environmentally attractive.

The relevant renewables are not confined to biomass, however. Wind energy similarly combines use of natural energy flows and land, generating electricity and revenue for the landowner while leaving the land below free for some other uses. Modern technologies also enable far better use of direct solar energy too, for heating buildings, greenhouses etc, and for generating electricity from solar cells.

During the 1990s, Europe has led the way in commercialising these processes and technologies. Renewable energy is no longer the stuff of hair shirts and R&D labs. Advanced and potent technologies are now commercially available for harnessing Europe's land and solar based resources in ways that bring revenue and employment to the land, and produce no net greenhouse gases – nor, in most cases, other pollutants.

The Kyoto Protocol on climate change should end any lingering doubts about the links between climate policy and land use. After extensive debate, the final agreement allows for carbon dioxide absorbed by managed plantations to be counted against emission targets. Such accumulated carbon would then become a natural reservoir for energy production.

Renewable energy is also important in the context of structural policies and debates on employment. Since renewable resources are highly dispersed, they tend to be most common in more remote parts of the EU. The small unit scale and other characteristics also tend to make these industries relatively employment-intensive.

The European Commission's recent white paper on renewable energy details a goal of obtaining 12 per cent of Europe's primary energy from renewables by 2010. This would involve around Ecu150bn (£99bn) of new investment over the decade. At present, renewable energy is a small bit player on the margins of European agricultural reform and structural policy. Instead it should now become a central part of debate about Europe's land, rural employment, and ways of bringing income to more remote regions.

The priority must be to ensure that the further reforms of the CAP now being contemplated, and energy liberalisation, do not damage the nascent renewable energy industries. Europe's tentative experience with biomass energy rests partly on benefits available to set-aside provisions under the CAP. This baby must not be thrown out with the bathwater of general agricultural production supports.

Similarly, the premium payments for electricity sources in the UK and other European countries are under pressure from the processes of electricity liberalisation, another laudable aim that must be seen through without cutting off the new industries at the knees. The EC white paper proposes a renewable energy credit scheme to ensure that renewable energy growth can be maintained, and probably enhanced, in the context of electricity liberalisation.

However, there are much deeper issues at stake. They come together in the over-arching question of how best to harness Europe's land, solar and human resources in ways that support both environmental and economic objectives at many different levels in European society: local, regional and ultimately global. To some degree this is also about balancing the urbanising and centralising forces of economic integration, a problem that Europe has been grappling with for decades.

That is an agenda that combines traditional issues of local land use and transport planning with the macroeconomic issues of CAP reforms, structural expenditures, rural and regional employment policies, and implementation of the Kyoto Protocol.

This is where renewable energy has an important role to play. The UK presidency should help the EU seize the challenge, and should use debates on implementing CAP reform, energy liberalisation, and the Kyoto Protocol as a springboard for deeper discussions on how to develop principles and policies for integrating renewable energy and land use in Europe.

Michael Grubb is head of energy and environment at the Royal Institute of International Affairs. This article is extracted from his presentation tomorrow to the Institute's conference, Climate after Kyoto: implications for energy.

Modest gains as rate news awaited

GOVERNMENT BONDS

By Vincent Boland in London and John Labate in New York

Government bond markets ended with modest gains, just below their highs for the day, in quiet trading yesterday. The main focus was on central bank activity in the US, Germany and the UK later this week, with the Federal Reserve, Bundesbank and Bank of England all studying interest rate developments.

"Markets are central bank-watching without really thinking anything is going to happen in any of the major markets," said Joanne Collins, senior market strategist at Nomura.

The biggest risk of a rate rise was in the UK, with one or two houses prepared to suggest that the Bank of England's monetary policy committee would lift base rates at its meeting. But the consensus was that weakening domestic data and a lull in the Asian financial crisis would swing the balance in favour of leaving rates alone.

That view was reflected in the markets, with both UK GILT prices and short sterling rates at levels suggesting a rate rise was unlikely. The March short sterling contract was up just 0.01, implying no change, while the March gilt future rose a modest $\frac{1}{32}$ to settle at 123$\frac{7}{32}$ in very thin futures trading.

Dealers said there was more activity in the cash market. They noted that the Bank of England is due to meet gilt market participants today to try to iron out potential delivery problems facing the March contract, which has been squeezed by a shortage of the 9 per cent Treasury bond of 2008, the "cheapest to deliver" component of the contract.

GERMAN BUNDS rose slightly ahead of today's Bundesbank meeting to set repo rates, with investors also looking to tomorrow's release of unemployment data. However, the market was stuck in a narrow range, and analysts said it needed a boost from the US Treasury market to make much progress this week.

The March bund future settled 0.17 higher at 106.60 in quiet London trading.

Other European markets also posted modest gains, but ITALIAN BTPs were still unsettled by disappointment that Italian interest rates were not falling more quickly. The March future settled 0.18 higher at 117.45.

US TREASURIES rose modestly in morning trading as the Federal Open Market Committee, which sets interest rate policy, started its two-day meeting.

By midday the benchmark 30-year Treasury was ¼ higher at 103¾, sending the yield down to 5.857 per cent. Among shorter-term issues, the 10-year note had gained $\frac{1}{8}$ to 104$\frac{3}{32}$, yielding 5.540 per cent, while the two-year note was up $\frac{1}{32}$ to 100¼, yielding 5.308 per cent. The Federal Funds rate was 5.43 per cent.

The FOMC meeting is set to last through today, and is not expected to result in a change in interest rate policy, according to most analysts. An interesting division in opinions has emerged, however, as to what action the Fed might take at future meetings.

Some analysts expect that a slowing US economy, due in part to problems in Asia, will result in the Fed lowering short-term interest rates in the near future. Others take the view that a tight labour market in the US will lead to wage rises and eventually a need for the Fed to raise rates.

Earlier, the Commerce Department announced a sharp 9.3 per cent drop in new home sales for December. In a separate report, the Conference Board released its index of leading economic indicators, which remained steady at 104.5.

Buying helped lift morning prices, especially of two-year and five-year notes.

"We're up a bit on the back of the weaker new home sale numbers," said Tom O'Connell, senior government trader at First Chicago Capital Markets.

IFC raises $1bn over five years

INTERNATIONAL BONDS

By Edward Luce

The International Finance Corporation, the commercial arm of the World Bank, yesterday issued its largest ever dollar bond – and its first for almost two years – in a $1bn offering.

The five-year bond, which was priced to yield 20 basis points over Treasuries, was issued for strategic reasons as opposed to exploiting any arbitrage opportunity, said John Borthwick at the IFC in Washington.

The bond, which came at a slightly wider spread than existing five-year benchmarks, such as the European Investment Bank bond or the Fannie Mae issue, was distributed relatively evenly across Europe, Asia and the Middle East according to an official at Deutsche Morgan Grenfell, sole lead.

"We wanted to get a benchmark out there to show that we are trading at the same levels as our supranational counterparts," said Mr Borthwick. "We added one or two extra basis points to make up for the fact we are less prolific borrowers in the dollar market."

The IFC was joined by its sister organisation, the WORLD BANK, which yesterday issued its largest dollar-denominated offering for several years in a $2bn offering.

The 10-year bond, which was priced to yield a spread of 23 basis points over Treasuries, was described by one or two bankers as "opportunistic", coming so hard on the heels of Fannie Mae's $4bn jumbo bond on Monday. Nevertheless, it met healthy demand, according to officials. The bond was lead-managed by Goldman Sachs and Morgan Stanley.

OEST POSTSPARKASSE, Austria's state-guaranteed postal bank, issued its first dollar bond since last July in a $300m offering.

The bond, also its largest issue in dollars so far, was priced to yield 20 basis points over five-year Treasuries, providing investors with some pick-up over more regular AAA issuers. An official at DMG, sole lead, said it attracted lively retail demand from Swiss and Benelux region investors.

New international bond issues

Borrower	Amount m.	Coupon %	Price	Maturity	Fees %	Spread bp	Book-runner
■ US DOLLARS							
World Bank	2bn	5.75	99.106R	Feb 2008	0.325R	+23(6¼%Aug07)	Goldman/Morgan Stanley
Merrill Lynch & Co	1.5bn	(a)#	(a)R	Feb 2003	0.35R	(a)(5½Jan03)	Merrill Lynch & Co
International Finance Corp	1bn	5.50	99.1246R	Feb 2003	0.25R	+20(5½Jan03)	Deutsche Morgan Grenfell
Advanta CCMT II, 98-A(b)‡	988	(b1,s)	99.80851	Jan 2001	–	–	Salomon Smith Barney
Oest Postsparkasse	300	5.625	99.686R	Feb 2003	0.25R	+20(5½Jan03)	Deutsche Morgan Grenfell
Banesto Issuances(c)‡	150	(c1)	99.935R	Feb 2003	0.20R	–	Salomon Smith Barney
■ D-MARKS							
Bayerische O'seas Finance	300	5.50	99.43R	Feb 2008	0.40R	+50(5¼Jan08)	BayerVB/SBCWDR
Aegon	150	2.50	90.955R	Feb 2003	0.275R	+7(4½%Aug02)	ABN Amro Hoare Govett
■ STERLING							
Carlsberg Finans	200	7.00	99.696R	Feb 2013	0.50R	+77(9%-2012)	UBS
Quadrant Housing Fin(d)	130	(d1)#	100.00R	Feb 2033	0.625R	+86(8%-2021)	Paribas
■ ITALIAN LIRE							
CS Financial Products(e)‡	100bn	(e1)	100.00R	Feb 2008	0.30R	–	CSFB
■ CANADIAN DOLLARS							
Export Development Corp	200	5.125	99.615R	Feb 2001	0.1875R	Flat(i)	TD Securities
■ PESETAS							
Norddeutsche Landesbank	10bn	4.60	100.975	Mar 2003	1.625	–	Argentaria

Final terms, non-callable unless stated. Yield spread (over govt bond) at launch supplied by lead manager. ‡ Floating-rate note. #Semi-annual coupon. R: Fixed re-offer price; fees shown at re-offer level. a) Priced today: Treasuries +63bp area. b) Credit Card Master Trust. Legal final: July 03. Average life: 2.94 yrs. b1) 1-mth Libor +4bp. c) Callable from Feb 01 at par. c1) 3-mth Libor +10bp. d) Amortises from Aug 18: av life 19.1 yrs. d1) Rises from 4.94% in yrs 1-2 to 7.93% from yr 13. e) Callable in Feb 05 at par. e1) 6-mth Libor +25bp to Feb 05, then +100bp. i) Over interpolated yield. s) Short 1st coupon.

Project bonds up 56% in value

By Simon Davies

There was a 56 per cent increase in the value of project bonds – non-recourse bonds used for project finance – last year, with the market growing to $7.5bn, according to IFR Project Finance International.

The bulk of deals came from the Americas, and significant further growth is expected, although the Asian crisis may affect demand for emerging market bonds.

PFI league tables show total project finance loans increased by 55 per cent to $74bn, in spite of the decline in Asian deals in the second half of the year.

There was an increase in total project loans to the Asia Pacific region but much of this was the result of a doubling of activity in Australia, now the second largest market.

Nonetheless, bankers say the full impact of the crisis will not be felt until this year. Asia amounts to about 16 per cent of the global market, according to PFI.

Latin American project loans grew from $3bn to $10bn, taking up some of the slack from Asia. By contrast, lending to UK private public partnership projects fell by one-third to $1.6bn.

The data go beyond pure non-recourse project financing, including limited recourse syndicated loans and refinancings for a broad spread of private sector infrastructure companies.

Telecoms was the largest sector for loans, followed by power. Chase topped the table for global lead arrangers by a wide margin, followed by Dresdner Kleinwort Benson, ABN Amro and Deutsche Bank.

CAPITAL MARKETS NEWS DIGEST

Russia facing debt downgrade

Russia is facing a possible downgrading of its credit rating by Moody's Investors Service at a time when the country's corporate borrowers are queueing up to raise finance on international capital markets. Moody's announcement yesterday that it had put Russia's Baa2 rating for foreign currency bonds "under review for possible downgrade" sparked a wave of selling of Russian eurobonds, which had already taken a hammering because of the sell-off of emerging market debt sparked by Asia's financial crisis.

The review will affect international bonds issued by the federal and local governments, corporations and banks, amounting to about $6bn in nominal value, as well as forthcoming issues from several of Russia's regions.

Moody's said recent interest rate rises on the domestic Treasury bill market had "complicated the debt servicing position of the federal government" and put increased pressure on "an already difficult fiscal position", leading to a heightened risk of capital flight as well as putting pressure on the rouble and foreign exchange reserves.

Increased short-term exposure by Russian banks to the international capital markets, and plans by local governments and corporates to borrow abroad, were adding to financial uncertainties.

Moody's said behind these developments were doubts about the government's ability to manage its fiscal policy effectively and its relations with banks, companies and the regions. The hiatus provided by Russia's traditionally strong commodity exports was ending. The return of modest economic growth was raising imports which, with falling commodity prices, would have a detrimental effect on trade and current account balances. "The possibility of the growth of twin deficits at a time of increased external and domestic public and private sector borrowing is emerging," Moody's said. *Vincent Boland*

■ PRIMARY DEALERS

Pretoria names 12 banks

South Africa's finance ministry yesterday named 12 domestic and foreign banks to act as primary dealers in South African government bonds as part of a restructuring of domestic capital markets. Six foreign banks are among the group: ABN Amro, Barclays Capital, Deutsche Morgan Grenfell, J. P. Morgan, Merrill Lynch and Société Générale. The domestic banks are First National Bank, Genbel Securities, Investec, Nedcor Investment Bank, Rand Merchant Bank, and Standard Bank.

The appointments coincide with a change in the way the government raises capital. From April 1, it is expected to switch to an auction system for bond issuance, abandoning the practice of tapping the market at regular intervals. Auctions are expected to be held weekly.

The moves coincide with the introduction of daily sale and repurchase operations on March 9 and a further relaxation of exchange controls. *Vincent Boland*

WORLD BOND PRICES

BENCHMARK GOVERNMENT BONDS

Feb 3	Red Date	Coupon	Bid Price	Bid Yield	Day chg yield	Wk chg yield	Month chg yld	Year chg yld
Australia	04/00	7.000	103.5190	5.27	+0.04	–0.04	–0.09	–0.92
	10/07	10.000	128.8765	5.98	+0.07	+0.02	+0.01	–1.40
Austria	09/99	7.000	104.4300	4.10	–0.01	–0.05	–0.28	+0.47
	07/07	5.625	103.4200	5.15	–0.01	–0.05	–0.26	–0.53
Belgium	01/00	4.000	99.9400	4.03	-	–0.03	–0.31	+0.55
	03/07	6.250	107.9500	5.14	+0.01	–0.05	–0.31	–0.65
Canada	09/99	4.750	99.6000	5.01	–0.03	+0.30	+0.03	+1.13
	06/07	7.250	113.4000	5.38	–0.01	+0.02	–0.13	–1.09
Denmark	12/99	6.000	103.0700	4.23	+0.02	+0.02	–0.28	+0.33
	11/07	7.000	111.6700	5.43	-	–0.01	–0.22	–1.02
Finland	01/99	11.000	106.6699	3.65	–0.12	–0.08	–0.32	+0.03
	04/06	7.250	114.2340	5.08	-	–0.09	–0.32	–0.96
France	01/00	4.000	100.0600	3.96	–0.04	–0.01	–0.27	+0.52
	10/04	6.750	111.2000	4.76	–0.01	–0.03	–0.25	–0.25
	10/07	5.500	103.2100	5.07	-	–0.04	–0.24	–0.50
	10/25	6.000	104.8300	5.65	–0.01	–0.05	–0.21	–0.84
Germany	09/99	4.000	100.2200	3.84	–0.01	+0.02	–0.27	+0.52
	11/04	7.500	115.1600	4.82	–0.02	–0.03	–0.29	–0.48
	07/07	6.000	106.8800	5.06	–0.01	–0.04	–0.26	–0.60
	07/27	6.500	111.9000	5.66	–0.02	–0.05	–0.25	–0.90
Ireland	04/99	6.250	101.6800	4.71	+0.02	–0.06	–0.27	–1.12
	08/06	8.000	117.9800	5.32	–0.01	–0.07	–0.22	–1.30
Italy	05/00	6.000	102.5300	4.80	–0.06	-	–0.05	–1.60
	05/02	6.250	104.8600	4.97	–0.03	–0.04	–0.16	–1.71
	07/07	6.750	109.9000	5.39	–0.03	–0.03	–0.18	–1.94
	11/26	7.250	118.3200	5.92	–0.01	–0.01	–0.13	–2.05
Japan	03/00	6.400	111.8100	0.82	+0.01	+0.03	+0.17	+0.17
	12/02	4.800	115.6800	1.45	+0.01	+0.02	+0.16	–0.27
	09/05	3.000	108.1100	1.85	–0.01	–0.01	+0.13	–0.53
	09/17	3.000	105.3300	2.65	-	–0.04	+0.10	–0.51
Netherlands	11/99	7.500	105.9200	3.97	–0.01	–0.01	–0.26	+0.42
	02/07	5.750	105.2800	5.01	–0.02	–0.04	–0.28	–0.61
New Zealand	02/00	6.500	98.4776	7.34	+0.04	+0.13	–0.27	+0.22
	11/06	8.000	107.7473	6.79	+0.04	-	–0.24	–0.49
Norway	01/99	9.000	104.4500	4.28	+0.03	-	–0.10	+0.48
	01/07	6.750	110.0800	5.30	+0.02	–0.03	–0.21	–0.51
Portugal	03/99	8.500	104.5198	4.30	–0.02	+0.02	–0.36	–1.19
	02/07	6.625	109.1033	5.33	–0.01	–0.02	–0.28	–1.38
Spain	07/99	7.400	104.3088	4.30	-	–0.03	–0.16	–1.16
	03/07	7.350	114.6138	5.29	–0.02	–0.03	–0.28	–1.44
Sweden	01/99	11.000	105.7090	4.75	–0.01	–0.04	–0.35	+0.09
	06/07	8.000	117.1370	5.62	+0.02	–0.01	–0.37	–1.31
Switzerland	03/00	5.000	107.0200	1.57	–0.04	–0.05	–0.31	–0.33
	06/07	4.500	112.9000	2.90	–0.02	–0.06	–0.38	–0.89
UK	08/99	6.000	99.1640	6.59	-	–0.01	–0.21	+0.20
	11/04	6.750	103.1719	6.17	–0.01	–0.01	–0.25	–0.93
	12/07	7.250	108.6719	6.07	–0.01	–0.01	–0.21	–1.24
	06/21	8.000	124.1953	6.05	–0.01	–0.01	–0.18	–1.46
US	10/99	5.625	100.4530	5.34	–0.05	–0.15	–0.26	–0.53
	11/04	7.875	113.2340	5.51	–0.05	–0.17	–0.18	–0.68
	08/07	6.125	104.3260	5.53	–0.03	–0.16	–0.13	–0.92
	08/27	6.375	106.8280	5.88	–0.02	–0.10	–0.02	–0.86
ECU	01/00	4.000	99.4800	4.28	+0.01	–0.02	–0.34	+0.21
	04/07	5.500	102.3700	5.17	-	–0.02	–0.29	–0.88

London closing. *New York mid-day. Source: Interactive Data/FT Information
Yields: Local market standard/Annualised yield basis. Yields shown for Italy exclude withholding tax at 12.5 per cent payable by nonresidents.

10 YEAR BENCHMARK SPREADS

Feb 3	Bid Yield	Spread vs Bunds	Spread vs T-Bonds		Bid Yield	Spread vs Bunds	Spread vs T-Bonds
Australia	5.98	+0.92	–0.44	New Zealand	6.79	+1.73	+1.25
Austria	5.15	+0.09	–0.39	Norway	5.30	+0.24	–0.24
Belgium	5.14	+0.08	–0.40	Portugal	5.33	+0.27	–0.21
Canada	5.37	+0.31	–0.17	Spain	5.29	+0.23	–0.25
Denmark	5.43	+0.37	–0.11	Sweden	5.62	+0.56	+0.08
Finland	5.08	+0.02	–0.46	Switzerland	2.90	–2.16	–2.64
France	5.06	-	–0.48	UK	6.07	+1.01	+0.53
Germany	5.06	-	–0.48	US	5.54	+0.48	-
Ireland	5.32	+0.26	–0.22	ECU	5.17	+0.11	–0.37
Italy	5.39	+0.33	–0.15				
Japan	1.85	–3.21	–3.69				
Netherlands	5.00	–0.06	–0.54				

Source: Interactive Data/FT Information
London closing. * New York closing.
Annualised yield basis.

EMERGING MARKET BONDS

Feb 3	Red date	Coupn	S & P Rating	Bid price	Bid yield	Day's chge yld	Mth's chge yld	Sprd vs US
■ EUROPE								
Croatia	02/02	7.000	BBB–	95.1250	8.44	–0.19	–0.11	+3.08
Poland	07/04	7.125	BBB–	102.1250	6.71	+0.10	–0.17	+1.29
Russia	06/07	10.000	BB–	88.7000	12.04	+0.20	+0.76	+6.53
■ LATIN AMERICA								
Argentina	09/27	9.750	BB	98.0000	9.95	+0.14	–0.22	+4.11
Brazil	05/27	10.125	BB–	94.2000	10.78	+0.09	–0.02	+4.94
Mexico	05/26	11.500	BB	120.6500	9.38	+0.11	–0.15	+3.56
■ ASIA								
China	07/06	7.750	BBB+	103.7000	7.14	+0.04	–0.01	+1.66
Philippines	10/16	8.750	BB+	93.2000	9.53	–0.77	–0.18	+3.87
Thailand	04/07	7.750	BBB–	85.6500	10.03	–0.41	–0.49	+4.52
■ AFRICA/MIDDLE EAST								
Lebanon	07/00	9.125	BB–	102.9000	7.75	–0.16	+0.16	+2.45
South Africa	10/06	8.375	BB+	99.3750	8.47	–0.10	+0.46	+2.99
Turkey	09/07	10.000	B	101.3457	9.76	–0.06	+0.02	+4.25
■ BRADY BONDS								
Argentina	03/23	5.500	BB	74.8800	8.38	+0.06	–0.11	+2.60
Brazil	04/14	4.500	BB–	78.3800	10.02	+0.11	+0.11	+4.39
Mexico	12/19	6.250	BB	84.2500	7.76	+0.07	–0.08	+2.05
Venezuela	03/20	6.750	B+	86.1300	8.11	+0.06	+0.13	+2.38

London closing. Prices in US$. Source: Interactive Data/FT Information.
Standard & Poor's ratings

BOND FUTURES AND OPTIONS

France

■ NOTIONAL FRENCH BOND FUTURES (MATIF) FFr500,000

	Open	Sett price	Change	High	Low	Est. vol.	Open int.
Mar	102.92	102.98	–0.04	103.00	102.86	54,344	131,105
Jun	102.24	102.32	–0.02	102.32	102.24	2,085	5,807
Sep	102.00	102.08	–0.02	102.00	102.00	2	–

■ LONG TERM FRENCH BOND OPTIONS (MATIF)

Strike Price	CALLS Jan	CALLS Feb	CALLS Mar	PUTS Jan	PUTS Feb	PUTS Mar
97	5.62	5.62	4.95	-	0.01	0.07
98	4.62	4.62	4.04	-	0.02	0.14
99	3.62	3.64	3.18	-	0.03	0.28
100	2.62	2.68	2.41	-	0.07	0.49
101	1.63	1.78	1.75	0.01	0.17	0.82

Est. vol. total, Calls 12,233 Puts 19,245. Previous day's open int., Calls 98,876 Puts 168,694.

Germany

■ NOTIONAL GERMAN BUND FUTURES (LIFFE)* DM250,000 100ths of 100%

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	106.40	106.60	+0.17	106.64	106.38	113389	254185
Jun	105.88	106.01	+0.16	106.03	105.85	693	8650

■ BUND FUTURES OPTIONS (LIFFE) DM250,000 points of 100%

Strike Price	CALLS Mar	CALLS Apr	CALLS May	CALLS Jun	PUTS Mar	PUTS Apr	PUTS May	PUTS Jun
10650	0.47	0.49	0.70	0.87	0.37	0.98	1.19	1.36
10700	0.24	0.33	0.51	0.67	0.64	1.32	1.50	1.66
10750	0.11	0.20	0.38	0.50	1.01	1.69	1.85	1.99

Est. vol. total, Calls 15261 Puts 23356. Previous day's open int., Calls 238188 Puts 250377

■ NOTIONAL GERMAN BUND (BOBL) FUTURES (DTB) DM250,000 100ths of 100%

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	105.18	105.34	+0.15	105.50	105.17	80,347	287,076
Jul	104.84	104.99	+0.12	104.93	104.84	2,264	8,121

■ NOTIONAL GERMAN BOBL FUTURES (LIFFE)* DM250,000 100ths of 100%

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	105.18	105.29	+0.10	105.23	105.18	1,509	21,421
Jun	104.86	104.93	+0.12	104.86	104.86	12	220

Italy

■ NOTIONAL ITALIAN GOVT. BOND (BTP) FUTURES (LIFFE)* Lira 200m 100ths of 100%

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	117.32	117.45	+0.18	117.49	117.20	38440	119715
Jun	116.83	116.98	+0.16	117.00	116.83	468	22635

■ ITALIAN GOVT. BOND (BTP) FUTURES OPTIONS (LIFFE) Lira200m 100ths of 100%

Strike Price	CALLS Mar	CALLS Jun	PUTS Mar	PUTS Jun
11700	0.73	1.23	0.26	1.25
11750	0.43	0.97	0.48	1.49
11800	0.21	0.76	0.76	1.78

Est. vol. total, Calls 1946 Puts 3156. Previous day's open int., Calls 72670 Puts 82391

Spain

■ NOTIONAL SPANISH BOND FUTURES (MEFF)

	Open	Sett price	Change	High	Low	Est. vol.	Open int.
Mar	107.64	107.79	+0.16	107.85	107.53	63,432	110,689

UK

■ NOTIONAL UK GILT FUTURES (LIFFE)* £50,000 32nds of 100%

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	123-08	123-07	+0-03	123-08	122-30	37279	184717
Jun	107-02	107-06	+0-05	107-02	107-02	490	10264

■ LONG GILT FUTURES OPTIONS (LIFFE) £50,000 64ths of 100%

Strike Price	CALLS Mar	CALLS Apr	CALLS May	CALLS Jun	PUTS Mar	PUTS Apr	PUTS May	PUTS Jun
123	0-49	0	0	0	0-35	15-52	15-52	15-52
124	0-21	0	0	0	1-07	16-52	16-52	16-52
125	0-10	0	0	0	1-60	17-52	17-52	17-52

Est. vol. total, Calls 6657 Puts 1756. Previous day's open int., Calls 69348 Puts 37064

Ecu

■ ECU BOND FUTURES (MATIF) ECU100,000

	Open	Sett price	Change	High	Low	Est. vol.	Open int.
Mar	102.34	102.30	–0.04	102.34	102.20	261	5,790

US

■ US TREASURY BOND FUTURES (CBT) $100,000 32nds of 100%

	Open	Latest	Change	High	Low	Est. vol.	Open int.
Mar	121-18	121-20	-	121-23	121-14	383,184	646,324
Jun	121-10	121-09	-	121-12	121-04	4,393	73,244
Sep	-	120-30	-	-	-	1,496	20,762

Japan

■ NOTIONAL LONG TERM JAPANESE GOVT. BOND FUTURES (LIFFE) Y100m 100ths of 100%

	Open	Close	Change	High	Low	Est. vol	Open int.
Mar	128.66	-	-	128.68	128.57	1475	n/a
Jun	128.01	-	-	128.03	127.96	457	n/a

* LIFFE futures also traded on APT. All Open interest figs. are for previous day.

US CORPORATE BONDS

Feb 2	Red date	Coupn	S & P Rating	Bid price	Bid yield	Day's chge yld	Mth's chge yld	Sprd v Govts
■ UTILITIES								
Pac Bell	07/02	7.25	AA–	105.0635	5.92	+0.02	–0.17	+0.48
NY Tel	08/25	7.00	A+	99.9808	7.00	+0.04	-	+1.14
CWE	05/08	8.00	BBB	110.2922	6.60	+0.04	–0.04	+1.04
■ FINANCIALS								
GECC	05/07	8.75	AAA	118.3641	6.12	+0.04	–0.10	+0.56
Banc One	08/02	7.25	A+	104.7476	6.02	+0.12	–0.12	+0.58
US West	01/07	7.30	BBB+	104.7319	6.59	+0.05	–0.06	+1.03
■ INDUSTRIALS								
WMX Tech	04/99	6.25	A–	100.1174	6.13	+0.02	–0.17	+6.13
Wal Mart	05/02	6.75	AA	103.4501	5.82	+0.03	–0.22	+0.38
Dayton Hud	06/21	9.70	BBB+	131.8350	6.92	+0.04	–0.03	+1.06
■ AGENCIES								
FHLMC	04/07	7.14	N/A	108.7476	5.89	+0.05	–0.08	+0.33
SLMA	03/00	7.50	N/A	103.8472	5.52	-	–0.24	+0.15
FNMA	02/18	8.95	N/A	131.6259	6.17	+0.04	–0.08	+0.31
FFCB	06/06	8.95	N/A	120.0719	5.86	+0.04	–0.11	+0.30
■ HIGH YIELD								
Stone Cont	02/01	9.88	B	102.0000	0.00	-	-	-
AK Stl	12/01	9.13	BB–	106.5000	0.00	-	-	-
Pacalta	06/04	10.75	B–	99.0000	0.00	-	-	-

New York closing. Source: Interactive Data/FT Information.
Standard & Poor's ratings. Yields: semi-annual basis.

US INTEREST RATES

Latest		Treasury Bills and Bond Yields			
		One month	-	Two year	5.34
Prime rate	8½	Two month	-	Three year	5.35
Broker loan rate	7⅛	Three month	5.23	Five year	5.43
Fed.funds	5½	Six month	5.28	10-year	5.57
Fed funds at intervention	-	One year	5.24	30-year	5.87

INTERNATIONAL BONDS

Feb 3	Red date	Coupon	S & P Rating	Bid price	Bid yld	Day's chge yld	Mth's chge yld	Spread v Govts
■ EURO DM								
EIB	02/07	5.750	AAA	104.7400	5.08	–0.03	–0.29	+0.12
Spain	01/07	5.750	AA	104.1600	5.15	–0.05	–0.31	+0.19
Philip Morris	03/04	5.375	A	101.0100	5.18	+0.02	–0.32	+0.56
Finland FRN	09/02	3.820	AA	100.6888	3.98	–0.03	–0.36	–0.25
■ EURO FFR								
Austria	01/04	5.500	AAA	103.5800	4.79	–0.01	–0.27	+0.19
Abbey Nat	02/04	6.000	AA	105.6800	4.89	–0.01	–0.27	+0.29
Cred Foncier	02/04	9.125	A	119.9200	5.20	-	–0.32	+0.60
SCIF FRN	12/01	3.750	AA–	99.8312	4.16	–0.03	–0.32	-
■ EURO LIRA								
EIB	02/07	7.000	AAA	110.9500	5.43	–0.02	–0.13	+0.12
Abbey Nat	02/02	6.800	AA	106.1000	5.09	–0.01	–0.18	+0.20
Walt Disney	06/00	8.625	A	107.3000	5.25	+0.06	–0.02	+0.46
EIB FRN	03/01	5.825	AAA	100.1255	4.69	–0.05	–0.06	–0.11
■ EURO £								
EIB	12/07	7.625	AAA	109.0793	6.35	–0.01	–0.25	+0.23
Dresdner Bk	12/07	7.750	AA–	106.1109	6.87	–0.01	–0.23	+0.75
British Gas	03/00	7.625	A+	101.0974	7.04	–0.01	–0.28	+0.45
Abbey Nat FRN	02/02	7.830	AA	99.9582	6.23	–0.02	–0.28	–0.14
■ EURO $								
EIB	04/07	7.250	AAA	109.3200	5.90	+0.01	–0.16	+0.39
ABN Amro	06/07	7.125	AA–	105.4704	6.34	–0.05	–0.08	+0.83
Quebec	01/07	7.000	A+	104.8148	6.29	-	–0.11	+0.78
Citicorp FRN	02/04	5.938	A+	99.6826	6.00	–0.02	–0.01	+0.58
■ EURO C$								
Bayer L–Bk	08/04	9.500	AAA	119.9071	5.74	+0.02	–0.29	+0.22
Toronto	05/04	8.500	AA+	114.7810	5.64	+0.02	–0.29	+0.12
Bell Canada	07/99	10.625	A+	106.7796	5.55	+0.03	–0.25	+0.94
Deutsche B FRN	09/02	5.875	AAA	101.3409	5.54	–0.01	+0.01	+0.09
■ EURO YEN								
World Bank	03/02	5.250	AAA	115.7500	1.31	+0.02	+0.19	+0.20
Spain	03/02	5.750	AA	117.7500	1.31	-	+0.17	+0.20
Cred Foncier	08/02	4.750	A	112.6546	1.80	+0.01	+0.14	+0.69
Italy FRN	07/99	0.797	AA	100.3778	0.42	-	+0.04	–0.03

London closing. Source: Interactive Data/FT Information
Standard & Poor's ratings. Yields: Local market standard/Annualised basis.

UK BONDS

FTSE Actuaries Govt. Securities

Price Indices UK Gilts	Tue Feb 3	Day's change %	Mon Feb 2	Accrued interest	xd adj. ytd
1 Up to 5 years (19)	120.57	0.05	120.51	2.43	0.88
2 5-15 years (20)	160.92	0.07	160.81	2.13	1.08
3 Over 15 years (5)	197.48	0.05	197.39	2.99	0.00
4 Irredeemables (4)	243.21	–0.10	243.44	2.49	1.07
5 All stocks (48)	153.71	0.05	153.63	2.47	0.84
Index-linked					
6 Up to 5 years (2)	215.10	0.06	214.97	2.12	0.00
7 Over 5 years (10)	217.16	0.05	217.05	1.30	1.14
8 All stocks (12)	215.84	0.05	215.73	1.37	1.02

UK Indices

	Low coupon yield Feb 3	Low Feb 2	Low Yr. ago	Medium coupon yield Feb 3	Medium Feb 2	Medium Yr. ago	High coupon yield Feb 3	High Feb 2	High Yr. ago
5 yrs	6.21	6.22	6.93	6.30	6.31	6.98	6.34	6.35	7.04
15 yrs	6.06	6.06	7.42	6.09	6.09	7.41	6.19	6.19	7.29
20 yrs	6.06	6.06	7.50	6.08	6.06	7.48	6.19	6.18	7.30
Irred.†	6.20	6.19	7.58						

	Inflation 5% Feb 3	Inflation 5% Feb 2	Inflation 5% Yr. ago	Inflation 10% Feb 3	Inflation 10% Feb 2	Inflation 10% Yr. ago
Up to 5 yrs	2.88	2.89	3.08	2.14	2.15	2.39
Over 5 yrs	3.05	3.06	3.50	2.85	2.85	3.30

Average gross redemption yields are shown above. Coupon Bands: Low: 0%-7¾%; Medium: 8%-10¾%; High: 11% and over. † Flat yield. ytd Year to date.

FT Fixed Interest Indices

	Feb 3	Feb 2	Jan 30	Jan 29	Jan 28	Yr ago	High*	Low*
Govt. Secs. (UK)	103.02	103.02	103.12	102.92	102.71	95.71	103.92	93.31
Fixed Interest	138.03	138.06	138.25	137.80	138.10	117.94	139.27	115.32

 * for 1997/98. Government Securities high since compilation: 127.40 (09/01/35), low 49.18 (03/01/75). Fixed Interest high since compilation: 133.27 (12/01/98), low 50.53 (03/01/75). Basis 100: Government Securities 15/10/26 and Fixed Interest 1928. SE activity indices rebased 1974.

UK GILTS PRICES

Notes	Yield Int	Yield Red	Price £	+ or –	52 week High	52 week Low
Shorts" (Lives up to Five Years)						
Treas 4½pc 1998‡‡	3.98	7.34	[illegible]	—	[illegible]	[illegible]
Treas 7¼pc 1998‡‡	7.25	7.27	100	—	[illegible]	100
Treas 15½pc '98‡‡	14.72	7.05	[illegible]	—	[illegible]	[illegible]
Exch 12pc 1998	11.58	6.98	[illegible]	—	[illegible]	[illegible]
Treas 9½pc 1999‡‡	9.28	6.89	[illegible]	—	[illegible]	[illegible]
Treas Flg Rate 1999‡‡	-	-	[illegible]	[illegible]	[illegible]	[illegible]
Exch 12¼pc 1999	11.57	6.84	[illegible]	—	[illegible]	[illegible]
Treas 10½pc 1999	10.04	6.73	[illegible]	—	[illegible]	[illegible]
Treas 6pc 1999‡‡	6.05	6.61	[illegible]	[illegible]	[illegible]	[illegible]
Conv 10¼pc 1999	9.57	6.68	106	[illegible]	[illegible]	[illegible]
Treas 11½pc 2001-4	10.11	6.53	[illegible]	[illegible]	[illegible]	[illegible]
Treas 10pc 2004	8.40	6.32	119	—	[illegible]	113
Funding 3½pc 1999-4	3.63	5.10	[illegible]	[illegible]	[illegible]	[illegible]
Conv 9½pc 2004	8.07	6.22	[illegible]	[illegible]	[illegible]	[illegible]
Treas 6¾pc 2004‡‡	6.54	6.17	[illegible]	[illegible]	[illegible]	[illegible]
Conv 9½pc 2005	8.00	6.23	[illegible]	[illegible]	[illegible]	[illegible]
Exch 10½pc 2005	8.38	6.26	[illegible]	[illegible]	[illegible]	[illegible]
Treas 12½pc 2003-5	9.83	6.28	[illegible]	[illegible]	[illegible]	[illegible]
Treas 8½pc 2005‡‡	7.43	6.12	[illegible]	[illegible]	[illegible]	[illegible]
Conv 9¾pc 2006	7.85	6.15	[illegible]	[illegible]	[illegible]	[illegible]
Treas 7½pc 2006‡‡	6.86	6.12	[illegible]	[illegible]	[illegible]	[illegible]
Treas 7¾pc 2006‡‡	7.02	6.17	[illegible]	[illegible]	[illegible]	[illegible]
Treas 8pc 2002-6‡‡	7.51	6.36	[illegible]	[illegible]	[illegible]	[illegible]
Treas 11¾pc 2003-7	9.57	6.33	[illegible]	[illegible]	[illegible]	[illegible]

Index-Linked (b)	Yield (1)	Yield (2)	Price £	+ or –	52 week High	52 week Low
2½pc '99	1.98	2.58	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '01 (78.3)	2.87	3.18	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '03 (78.8)	2.83	3.14	[illegible]	[illegible]	[illegible]	[illegible]
4⅜pc '04‡‡ (135.6)	2.94	3.12	[illegible]	[illegible]	[illegible]	[illegible]
2pc '06 (69.5)	3.04	3.18	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '09 (78.8)	3.06	3.18	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '11 (74.6)	3.08	3.15	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '13 (89.2)	3.06	3.14	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '16 (81.6)	3.08	3.13	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '20 (83.0)	3.07	3.13	[illegible]	[illegible]	[illegible]	[illegible]
2½pc '24‡‡ (97.7)	3.08	3.12	[illegible]	[illegible]	[illegible]	[illegible]
4⅛pc '30‡‡ (135.1)	3.03	3.09	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Other Fixed Interest

[illegible]

هكذا من الأصل

CURRENCIES AND MONEY

Some foreign buyers return to Asia

MARKETS REPORT

By Simon Kuper

The yen and other Asian currencies rallied yesterday as the market took a brighter view of the continent's future.

Japan's ruling Liberal Democratic Party was discussing a supplementary budget for the fiscal year 1998-1999 that would pack a fiscal stimulus worth Y6,000bn. Asian shares also continued to benefit from events of last week, when Korea rescheduled $24bn of short-term foreign debt and Thailand abolished eight-month-old restrictions on non-residents trading the baht. This week Korea has received a ratings upgrade, while Thailand is soon expected to renegotiate the terms of its $17.2bn rescue package with the International Monetary Fund.

Steve Jennions, emerging markets economist at Credit Agricole Indosuez in London, said foreign investors were returning to Asian equity markets, boosting currencies in the process. "Funds have been massively underweight Asia for months now," he said. "In order for them to get back to their benchmarks is not a one-day matter." Goldman Sachs yesterday told its clients that now was the time to own a basket of Asian currencies, although it warned that the recovery would not occur in a straight line, and that the Indonesian rupiah was the riskiest currency in its basket.

The yen again rose with the Nikkei stock index. Currency strategists said the yen usually appreciated in the first quarter of the year, as Japanese investors sold foreign assets and repatriated the proceeds in order to improve their balance sheets for the fiscal year-end on March 31. Joe Prendergast, head of global foreign exchange research at Credit Suisse First Boston in London, said the mood in Asia had improved from "fairly extreme negative territory", but had still not yet turned around completely.

The baht jumped from Bt51 against the dollar to Bt48, having started Friday as low as Bt55.

The Singapore dollar, Malaysian ringgit, Philippine peso and Taiwan dollar also rose yesterday, but the Korean won surprised many by failing to advance.

The yen was at Y125.85 against the dollar in late US trading yesterday, Y0.95 up on Monday's London close. The dollar had support at Y125.8, but then little until Y124.60.

Against the D-Mark the dollar was down 1.1 pfennigs in late trading at DM1.8110. The pound was 0.9 cents stronger against the dollar at $1.6450, and little changed against the D-Mark.

Trading volumes were low, as they have been for much of 1998.

■ The Russian rouble softened yesterday, even though interest rates stand at 42 per cent. Moody's, the rating agency, said it might cut Russia's country ceilings for foreign currency bonds and foreign currency bank deposits. Many strategists are expecting a devaluation. Jesper Dannesboe, treasury economist at ABN-Amro in London, said that if the Russian outlook did worsen, the Swiss franc would benefit.

Of course, the Swissie has long been a safe haven from any Russian turmoil. But that connection has become stronger recently, says Mr Dannesboe. He says that if worries over Russia grew, Russian mafia money would pour into Swiss bank accounts. The weight of this money is so great that the Swiss National Bank recently stopped using M0 money supply as a target, partly because the figure is distorted by Russian in- and outflows.

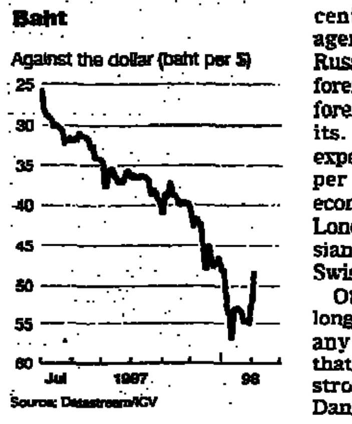
■ Today central banks talk about interest rates. The Federal Reserve Open Market committee's two-day meeting ends, and the Bank of England monetary policy committee's two-day meeting begins.

Both are expected to leave rates unchanged – in fact, the short sterling market is pricing in no further UK rises in this cycle. The monetary policy committee may make a statement after its meeting designed to weaken sterling. Last week Eddie George, Bank of England governor, spoke again of the pain the strong pound was causing exporters.

Some investors think the Fed may change its bias from raising rates to neutral.

Baht

Against the dollar (baht per $)



Source: Datastream/ICV

■ **Pound in New York**

Feb 3	Latest	Prev. close
£ spot	1.6420	1.6390
1 mth	1.6397	1.6365
3 mth	1.6347	1.6316
1 yr	1.6150	1.6122

■ **OTHER CURRENCIES**

Feb 3	£	$
Czech Rp	57.3107 - 57.3949	34.9030 - 34.9330
Hungary	340.502 - 340.775	207.370 - 207.410
Iran	4929.00 - 4926.00	3000.00 - 3000.00
Kuwait	0.5011 - 0.5016	0.3052 - 0.3053
Peru	4.5746 - 4.5823	2.7860 - 2.7890
Poland	5.7848 - 5.7965	3.5230 - 3.5280
Russia	9.9185 - 9.9282	6.0405 - 6.0415
U.A.E.	6.0307 - 6.0349	3.6728 - 3.6731

WORLD INTEREST RATES

MONEY RATES

February 3	Over night	One month	Three mths	Six mths	One year	Lomb. inter.	Dis. rate	Repo rate
Belgium	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	6.00	2.75	-
France	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.60	-	3.30
Germany	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	4.50	2.50	3.30
Ireland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	-	6.75
Italy	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7.00	5.50	6.23
Netherlands	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	2.75	3.30
Switzerland	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	1.00	-
US	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	5.00	-
Japan	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	-	0.50	-
■ $ LIBOR FT London								
Interbank Fixing	-	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
US Dollar CDs	-	5.33	5.37	5.40	5.42	-	-	-
ECU Linked Ds	-	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-
SDR Linked Ds	-	[illegible]	[illegible]	[illegible]	[illegible]	-	-	-

The FT intends to replace the Libor FT London interbank fixing rate with the BBA London rate on 20/2/98. Any comments should be sent to Martin Dickson, Financial Editor, at the FT. Mid rates are shown for the domestic Money Rates, US$ CDs, ECU & SDR Linked Deposits (Ds).

EURO CURRENCY INTEREST RATES

* LIFFE futures also traded on APT

■ **EUROLIRA OPTIONS** (LIFFE) L1000m points of 100%

Strike Price	CALLS Mar	CALLS Jun	CALLS Sep	PUTS Mar	PUTS Jun	PUTS Sep
9400	0.23	1.03	1.45	0.07	0.06	0.04
9425	0.09	0.79	1.21	0.18	0.07	0.05
9450	0.03	0.59	0.98	0.37	0.12	0.07

Est. vol. total, Calls 23429 Puts 10172. Previous day's open int., Calls 232378 Puts 103375

POUND SPOT FORWARD AGAINST THE POUND

DOLLAR SPOT FORWARD AGAINST THE DOLLAR

CROSS RATES AND DERIVATIVES

EXCHANGE CROSS RATES

Danish Kroner, French Franc, Norwegian Kroner, and Swedish Kronor per 10; Belgian Franc, Yen, Escudo, Lira and Peseta per 100.

■ **D-MARK FUTURES** (IMM) DM 125,000 per DM

	Open	Latest	Change	High	Low	Est. vol	Open int.
Mar	0.5513	0.5502	-0.0008	0.5528	0.5494	30,009	80,865
Jun	0.5528	0.5528	-0.0009	0.5528	0.5522	65	8,527
Sep	-	0.5557	-0.0004	0.5565	0.5557	1,500	1,626

■ **SWISS FRANC FUTURES** (IMM) SFr 125,000 per SFr

	Open	Latest	Change	High	Low	Est. vol	Open int.
Mar	0.6820	0.6806	-0.0017	0.6834	0.6795	13,819	47,665
Jun	0.6882	0.6872	-0.0010	0.6888	0.6871	61	1,283
Sep	0.6935	0.6935	-0.0015	0.6935	0.6935	972	1,114

UK INTEREST RATES

LONDON MONEY RATES

UK clearing bank base lending rate 7¼ per cent from Nov 6, 1997

Also traded on APT. All Open interest figs. are for previous day.

■ **SHORT STERLING OPTIONS** (LIFFE) £500,000 points of 100%

Strike Price	CALLS Mar	CALLS Jun	CALLS Sep	PUTS Mar	PUTS Jun	PUTS Sep
9250	0.08	0.28	0.45	0.07	0.09	0.11
9275	0.01	0.12	0.29	0.24	0.20	0.20
9300	0	0.04	0.16	0.48	0.37	0.32

Est. vol. total, Calls 3736 Puts 4037. Previous day's open int., Calls 235129 Puts 202060

BASE LENDING RATES

	%		%		%
Adam & Company	7.25	Exeter Trust Limited	8.25	●Singer & Friedlander	7.25
Allied Irish Bank (GB)	7.25	Financial & Gen Bank	8.00	●Smith & Williamson	7.25
●Henry Ansbacher	7.25	●Robert Fleming & Co	7.25	Sun Banking Corp Ltd	7.25
Banco Bilbao Vizcaya	7.25	●Guinness Mahon	7.25	TSB	7.25
Bank of Cyprus	7.25	Habib Bank AG Zurich	7.25	United Bank of Kuwait	7.25
Bank of Ireland	7.25	●Hambros Bank	7.25	Unity Trust Bank Plc	7.25
Bank of India	7.25	Heritable & Gen Inv Bk	7.25	Whiteaway Laidlaw	7.25
Bank of Scotland	7.25	C. Hoare & Co	7.25	Yorkshire Bank	7.25
Barclays Bank	7.25	Hongkong & Shanghai	7.25		
Brit Bk of Mid East	7.25	Investec Bank (UK) Ltd	7.25		
●Brown Shipley & Co Ltd	7.25	Julian Hodge Bank	7.25		
Citibank NA	7.25	●Leopold Joseph & Sons	7.25		
Clydesdale Bank	7.25	Lloyds Bank	7.25		
The Co-operative Bank	7.25	Midland Bank	7.25		
Coutts & Co	7.25	NatWestminster	7.25		
Cyprus Popular Bank	7.25	●Rea Brothers	7.25		
Duncan Lawrie	7.25	Royal Bk of Scotland	7.25		
		Scottish Widows Bank	7.25		

● Members of London Investment Banking Association

* In administration

EMS EUROPEAN CURRENCY UNIT RATES

COMMODITIES AND AGRICULTURE

Pretoria warns on unexploited mineral rights

By Victor Mallet in Pretoria and Mark Ashurst in Cape Town

Mining companies in South Africa with unexploited mineral rights will have to "use it or lose it", the South African government said yesterday.

Launching a consultation paper on mining policy, Penuell Maduna, minister of minerals and energy, said the government's long-term aim was for all mineral rights to be vested in the state.

This would replace the current dual system under which some rights are held privately and some by the state, although the government also wanted to ensure security of tenure of mining rights.

"Right now, there are many people who hold all sorts of concessions and rights who are not mining," said Mr Maduna. Potential foreign investors were being kept out by "vested interests".

Among the plans outlined in the paper is an annual minimum work and investment requirement to discourage "the unproductive holding of prospecting and mining rights". The government will also investigate the possibility of a mineral rights tax to discourage those failing to mine.

Big South African mining companies have expressed concern about the government's intentions, arguing that "absolute" security of tenure afforded by private ownership of mineral rights has been vital for the costly development of deep gold mines and other mineral assets.

However, the government has pointed out that private ownership of mineral rights is unusual – except in South Africa and the US – and says it is determined to increase black ownership of mining interests following the advent of democracy in 1994.

● Weak gold prices and nervousness triggered by the Bre-X exploration scandal in Indonesia has made "investment in mining almost a guaranteed recipe for losing money in 1997", said Jeremy Wrathall, director of mining finance at SBC Warburg Dillon Read at the annual African Mining Conference in Cape Town yesterday. He said the downturn in commodity markets would exacerbate negative sentiment this year.

The collapse of the bullion price, which reached an 18-year low in November, had renewed attention on the need to improve cash costs and productivity at South African gold mines. These were structural problems which would not be remedied by a rally in the gold price.

Gerard Holden, mining and metals director at Barclays Capital, told the conference that exploration spending this year would be restricted to well-advanced projects. The economic contraction in Asia had weakened demand for commodities and would "shape demand for new mining projects for years to come".

Silver at highest for nine years

MARKETS REPORT

By Kenneth Gooding, Robert Corzine and Gary Mead

Silver's price was "fixed" in London yesterday at $6.385 a *troy ounce*, its highest for nine years. At the London close silver was $6.56, up nearly 4 per cent from Monday's close of $6.31.

Traders suggested the price was being supported by extremely tight forward supply, thought to stem from a deliberate squeeze by speculators rather than an increase in demand.

Gold closed in London $3.55 an ounce down from Monday's close at $297.35. Dealers suggested the recent price jump was caused by speculators covering short positions.

On the London Metal Exchange copper fell more than 3 per cent after another big stock increase and data showing weakness in the US housing market.

Oil came under renewed pressure on continuing uncertainty over the confrontation between the UN and Iraq. Brent Blend for March delivery was off 31 cents at $14.37 a barrel in late trading on London's International Petroleum Exchange.

Reports of a "very constructive" conversation between UN secretary general Kofi Annan and Tareq Aziz, Iraq's deputy prime minister, put additional pressure on prices. A diplomatic breakthrough could accelerate moves to more than double the oil-for-food programme, which could drag prices down further.

Coffee rose on the London International Financial Futures Exchange in thin volumes. The March contract closed at $1,765 a tonne, up $30.

Volumes were also low in cocoa. March closed up £11 at £1,042 a tonne.

Chinese zinc output rises 19%

By Kenneth Gooding, Mining Correspondent

China reacted to being caught by a vicious squeeze on the London Metal Exchange's zinc market last year by increasing its output of the metal by nearly 19 per cent and boosting zinc exports by 158 per cent.

By increasing its zinc metal output to 1.41m tonnes, equivalent to nearly one-fifth of the global total, China reinforced its position as the world's biggest producer, according to the International Lead and Zinc Study Group.

As a result of China's efforts, the global zinc market showed a slight supply surplus last year, said the ILZSG. Consumption rose 2.8 per cent to 7.73m tonnes while production of refined zinc rose 4 per cent to just over that level.

Asia's economic slowdown caused a 28 per cent drop in Thailand's zinc consumption and a 1.4 per cent fall in South Korea's, whereas there had previously been 12 years of continuous growth.

The lead market was balanced last year, said the ILZSG. Global consumption rose 0.3 per cent to 6.054m tonnes while refined lead output rose by 2.8 per cent to 6.046m tonnes. Lead from recycled scrap accounted for 59 per cent of production.

Cheap ethylene cheers users

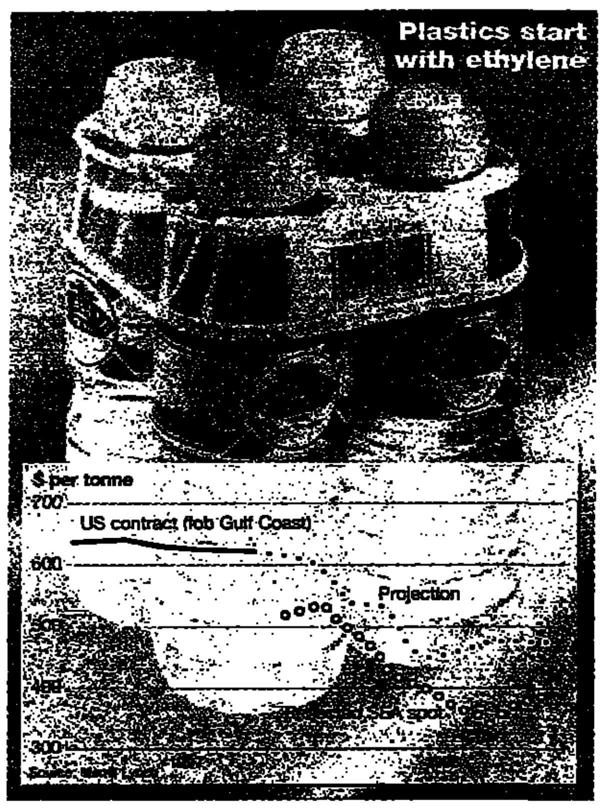
Prices for ethylene, the starting point for everything from motor car trim to soft drinks cartons, are approaching historic lows in some markets.

The weakness, emanating from Asia, is expected to provide relief to hard-pressed packaging companies, manufacturers and speciality chemicals companies, which have been unable to pass on higher costs to customers.

Rexam, a UK paper and packaging group badly affected by high raw material prices, said yesterday: "The Far East must have a depressing influence on western prices and that will be good for us and good for our customers."

The spot price of ethylene in South Korea has fallen to $340 a tonne because of the slump in demand – half what it was in the region early last year.

Peter Blair, analyst with Salomon Smith Barney, says there is scope for the price to fall below $300 this year. Merrill Lynch, the US investment bank, sees prices falling by a quarter.



Furthermore, South Korean producers are reported to be offering additional discounts of between 15 per cent and 20 per cent for customers willing to pay cash.

Ethylene is one of the basic building block chemicals and the most capital-intensive part of the chemicals business. "Cracked" – or separated – from naphtha, the oil and gas extract, it is used to make the polyethylene for plastic bags and shampoo bottles, the polypropylene for car bumpers, the styrene for heat resistant cups and the ethylene glycol for polyester fibre.

Because it is a gas, it is rarely transported any distance – two-thirds is transformed into by-products at the same plant where it is extracted, and most of the rest stays within the region. So, while Korean prices have tumbled, European supply has held up well and prices currently remain tight at just above $500 a tonne.

However, specialists believe an attack on costs is inevitable. "There is a knock-on effect in derivative products, where price differentials are quickly arbitraged away. You have an influx of cheap polyethylene into Europe. That pushes down prices of polyethylene made here and if they fall they push down the price of ethylene," Mr Blair says.

The situation is exacerbated by a sharp increase in world supply. Several new crackers started operating at the end of last year and pushed world production up 7.1 per cent from 83.6m tonnes in 1996 to 89.5m tonnes in 1997. By contrast, consumption only increased 5.7 per cent, according to Chem Systems, a management consultancy for the oil and chemicals industry.

Richard Sleep of Chem Systems says: "Last year saw the largest increase in ethylene capacity there has ever been."

So far, the big European manufacturers such BP, ICI and Enichem have resisted lowering their prices. Consequently, they have profited as naphtha prices fall and margins widen.

Last week, the leading US groups – Dow, Dupont and Millennium – hinted, with their fourth-quarter figures, that commodity prices outside Asia would fall this year.

"When that happens," said Martin Evans of Sutherlands, the agency broker, "it will be pay-back time for the manufacturers who were hit so badly when prices were squeezed up a couple of years ago."

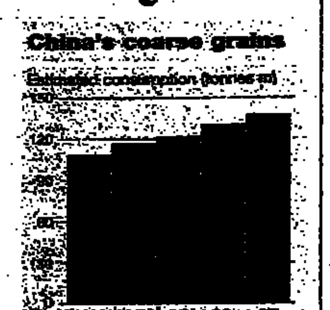
Peter John

China seen as big corn buyer

By James Harding in Shanghai

China is set to re-emerge as a substantial importer of corn in 1998-99, buying possibly 2.1m tonnes, according to the US Feed Grains Council.

The council's latest forecast underlines the increasing demand for corn in China, particularly for use as feed grains as the livestock population expands to cater for growing appetites for meat among increasingly affluent Chinese citizens.



China's net corn imports could exceed 9m tonnes by 2006-07, reflecting how demand will outstrip production as consumption habits move faster than the growth in available farmland and farm yields.

The country has been a net exporter of corn since 1996-97, when it exported 3.93m tonnes followed by 3.75m tonnes in 1997-98. During the early 1990s, it sold far larger quantities of corn abroad, exporting 10m to 12m tonnes a year.

The Feed Grains Council emphasised that its 1998-99 forecast identified the long term trends in Chinese demand and production, but was less sensitive to short-term fluctuations in harvests and policies.

US agriculture officials are waiting to see how Asia's financial crisis affects Chinese agriculture. Some forecasts for growth of Asian meat consumption and feed grain use have been cut.

In China, the uncertain prospects for meat exports elsewhere in Asia also blur the accuracy of forecasting, agriculture officials said. And opportunities for corn imports will be swayed by whether Beijing imposes tax on them. The tax was waived in 1995, when China was last a substantial importer of corn.

The growth in livestock production is the driving force behind increasing demand for corn in China. Pork production is expected to grow 4.1 per cent over the next decade, from 42.5m tonnes in 1997-98 to 60.9m tonnes in 2006-07, according to the council, and beef production is expected almost to double to 10.8m tonnes over the same period.

COMMODITIES PRICES

BASE METALS

LONDON METAL EXCHANGE

(Prices from Amalgamated Metal Trading)

■ ALUMINIUM, 99.7 PURITY ($ per tonne)

	Cash	3 mths
Close	1498-99	1520-20.5
Previous	1517-18	1536-37
High/low		1532/1512
AM Official	1503-03.5	1522.5-23.5
Kerb close		1514-5
Open int.	254,364	
Total daily turnover	74,662	

■ ALUMINIUM ALLOY ($ per tonne)

Close	1320-25	1343-5
Previous	1332-37	1355-57
High/low		1353/1345
AM Official	1319-19.5	1345-47
Kerb close		1342-5
Open int.	5,429	
Total daily turnover	1,605	

■ LEAD ($ per tonne)

Close	516-7	528.5-9.0
Previous	522-23	532.5-33.0
High/low		530/525
AM Official	516-6.5	527.5-8
Kerb close		529-30
Open int.	32,985	
Total daily turnover	12,782	

■ NICKEL ($ per tonne)

Close	5325-35	5420-25
Previous	5445-55	5530-40
High/low		5510/5420
AM Official	5385-90	5475-80
Kerb close		5425-30
Open int.	58,930	
Total daily turnover	24,508	

■ TIN ($ per tonne)

Close	5160-70	5200-05
Previous	5170-80	5210-15
High/low		5240/5190
AM Official	5165-70	5200-10
Kerb close		5230-40
Open int.	13,403	
Total daily turnover	2,358	

■ ZINC, special high grade ($ per tonne)

Close	1071.5-2.5	1097-8
Previous	1096.5-97.5	1121-22
High/low		1112/1090
AM Official	1068.5-69.5	1094-95
Kerb close		1099-100
Open int.	70,373	
Total daily turnover	27,249	

■ COPPER, grade A ($ per tonne)

Close	1678.5-9.5	1706-7
Previous	1737.5-8.5	1764-64.5
High/low		1754/1700
AM Official	1707-08	1732-33
Kerb close		1702-3
Open int.	149,341	
Total daily turnover	58,106	

■ LME AM Official £/$ rate: 1.6383
LME Closing £/$ rate: 1.6425

Spot: 1.6417 3 mths: 1.6347 6 mths: 1.6261 9 mths: 1.6196

■ HIGH GRADE COPPER (COMEX)

	Sett price	Day's change	High	Low	Vol	Open int
Feb	76.30	-2.30	78.50	76.00	383	2,157
Mar	76.75	-2.10	79.00	75.90	4,189	32,054
Apr	77.25	-2.10	78.40	77.20	46	1,807
May	77.70	-2.00	79.75	77.00	888	7,777
Jun	78.10	-1.90	79.10	78.10	72	1,899
Jul	78.55	-1.80	79.60	77.90	250	5,075
Total						

PRECIOUS METALS

■ LONDON BULLION MARKET

(Prices supplied by N M Rothschild)

Gold(Troy oz)	$ price	£ equiv	SFr equiv
Close	297.00-297.50		
Opening	302.20-302.60		
Morning fix	299.70	182.633	441.158
Afternoon fix	298.35	181.754	439.977
Day's High	302.20-302.60		
Day's Low	296.70-297.10		
Previous close	302.30-302.80		

Loco Ldn Mean Gold Lending Rates (Vs US$)

1 month ....3.83 6 months 3.65
2 months ....3.79 12 months 3.56
3 months 3.76

Silver Fix	p/troy oz.	US cts equiv.
Spot	389.80	638.50
3 months	382.35	623.50
6 months	380.45	627.65
1 year	380.25	612.60
Gold Coins	**$ price**	**£ equiv.**
Krugerrand	302-305	183-185
Maple Leaf	-	-
New Sovereign	69-71	42-44

Precious Metals continued

■ GOLD COMEX (100 Troy oz.; $/troy oz.)

	Sett price	Day's change	High	low	Vol	Open int
Feb	295.8	-7.6	303.6	294.7	931	2,367
Mar	296.3	-7.7	302.2	296.0	4	9
Apr	297.2	-7.8	305.8	296.0	14,572	73,460
Jun	299.1	-7.9	306.6	297.7	320	14,182
Aug	300.9	-7.9	307.7	300.0	386	5,641
Oct	302.8	-7.8	305.4	305.0	2	3,214
Total					17,533	158,845

■ PLATINUM NYMEX (50 Troy oz.; $/troy oz.)

Apr	386.2	-5.8	392.0	383.6	986	9,154
Jul	384.2	-5.8	386.0	383.0	227	836
Oct	383.2	-5.8	-	-	1	345
Jan	384.2	-5.8	-	-	4	14
Total					2,113	10,349

■ PALLADIUM NYMEX (100 Troy oz.; $/troy oz.)

Mar	236.95	-2.20	238.00	235.00	521	3,561
Jun	233.95	-2.20	235.00	235.00	142	798
Sep	231.95	-2.20	-	-	1	232
Total					664	4,591

■ SILVER COMEX (5,000 Troy oz.; Cents/troy oz.)

Feb	660.5	+37.2	-	-	40	41
Mar	661.5	+36.7	663.0	621.5	16,293	59,075
May	657.0	+33.2	661.0	621.0	1,801	13,459
Jul	652.5	+31.3	664.0	622.0	1,006	11,525
Sep	648.0	+30.2	630.0	625.0	318	4,457
Dec	643.5	+28.7	630.0	618.0	386	8,631
Total					19,888	105,080

ENERGY

■ CRUDE OIL NYMEX (1,000 barrels, $/barrel)

	Latest price	Day's change	High	Low	Vol	Open int
Mar	16.68	-0.37	17.17	16.60	53,420	93,286
Apr	16.91	-0.33	17.25	16.83	24,467	53,476
May	17.11	-0.31	17.44	17.05	5,770	31,460
Jun	17.35	-0.24	17.71	17.25	4,191	44,630
Jul	17.53	-0.23	17.74	17.48	965	20,703
Aug	17.72	-0.19	17.85	17.72	692	15,421
Total					93,469	419,328

■ CRUDE OIL IPE ($/barrel)

	Latest price	Day's change	High	Low	Vol	Open int
Mar	15.39	-0.29	15.78	15.30	14,946	64,321
Apr	15.60	-0.25	16.11	15.50	10,532	45,899
May	15.80	-	16.10	15.70	2,558	20,020
Jun	15.99	-	16.29	15.96	3,930	27,678
Jul	16.20	-	16.43	16.15	1,339	11,772
Aug	16.55	-	16.58	16.54	92	6,159
Total					n/a	n/a

■ HEATING OIL NYMEX (42,000 US galls.; c/US galls.)

	Latest price	Day's change	High	Low	Vol	Open int
Mar	46.45	-0.93	47.60	46.40	13,827	57,418
Apr	47.00	-0.81	48.05	46.95	5,673	26,282
May	47.50	-0.66	48.42	47.50	2,455	15,495
Jun	47.95	-0.51	48.82	47.90	953	18,815
Jul	48.65	-0.31	49.47	48.55	573	11,565
Aug	49.60	-0.01	50.22	49.50	658	8,383
Total					25,339	174,235

■ GAS OIL IPE ($/tonne)

	Sett price	Day's change	High	Low	Vol	Open int
Feb	140.00	-2.50	144.00	140.00	5,861	20,954
Mar	142.00	-2.50	145.50	141.50	4,949	16,520
Apr	143.75	-2.00	147.00	143.50	1,549	11,032
May	145.25	-2.25	148.50	145.25	944	7,142
Jun	147.25	-2.00	149.50	147.25	361	12,450
Jul	149.00	-2.00	151.25	151.25	40	3,945
Total					14,500	104,308

■ NATURAL GAS IPE (1,000 therms; pence per therm)

Mar	10.220	-0.180	10.400	10.220	245	2,050
Apr	9.910	-0.080	9.9600	9.910	125	2,030
Total					1,005	11,325

■ NATURAL GAS NYMEX (10,000 mmBtu.; $/mmBtu.)

	Latest price	Day's change	High	Low	Vol	Open int
Mar	2.280	-0.049	2.380	2.260	43,701	42,781
Apr	2.295	-0.053	2.367	2.280	15,746	19,705
May	2.310	-0.043	2.368	2.300	7,697	14,093
Jun	2.320	-0.038	2.370	2.315	4,560	11,656
Jul	2.325	-0.038	2.365	2.320	2,150	10,236
Aug	2.330	-0.043	2.375	2.330	2,640	11,216
Total					84,314	192,425

■ UNLEADED GASOLINE
NYMEX (42,000 US galls.; c/US galls.)

	Latest price	Day's change	High	Low	Vol	Open int
Mar	51.30	-1.34	52.85	51.15	11,430	35,298
Apr	54.35	-1.03	55.35	54.05	5,816	19,626
May	54.60	-0.93	55.35	54.50	1,882	12,894
Jun	54.65	-0.78	55.20	54.55	536	9,840
Jul	54.40	-0.63	54.85	54.30	327	9,052
Aug	54.30	-0.08	54.30	54.15	716	4,487
Total					21,215	98,633

GRAINS AND OIL SEEDS

■ WHEAT LIFFE (100 tonnes; £ per tonne)

	Sett price	Day's change	High	Low	Vol	Open int
Mar	80.70	-	81.15	80.70	117	2,295
May	82.70	-	83.15	82.50	175	3,847
Jul	84.70	-	85.25	85.00	56	558
Sep	80.75	-	-	-	-	53
Nov	82.75	-	82.75	82.75	10	1,482
Total					363	8,334

■ WHEAT CBT (5,000bu min; cents/60lb bushel)

Mar	344.25	+0.75	347.00	341.00	11,889	50,734
May	353.75	+1.75	356.00	350.25	2,970	17,919
Jul	361.00	+1.50	364.00	357.50	2,610	23,347
Sep	367.00	+3.00	369.50	365.00	276	2,645
Dec	378.00	+1.00	381.00	376.00	167	4,301
Jul	371.00	+3.50	367.50	367.50	1	26
Total					17,949	99,213

■ MAIZE CBT (5,000 bu min; cents/56lb bushel)

Mar	275.00	-0.50	277.75	274.75	30,080	138,283
May	282.50	-	285.00	282.00	6,202	65,892
Jul	288.25	+0.25	290.50	287.25	6,623	71,266
Sep	286.00	-	287.25	284.75	491	9,803
Dec	286.25	+0.25	287.00	284.50	4,510	45,714
Mar	292.25	+0.25	293.00	291.00	447	2,735
Total					48,407	335,235

■ BARLEY LIFFE (100 tonnes; £ per tonne)

Mar	75.60	-0.30	75.90	75.60	332	1,086
May	77.85	-0.25	78.15	77.70	127	53
Sep	78.00	-0.40	-	-	-	6
Nov	80.00	-0.40	80.00	80.00	10	263
Jan	82.00	-0.40	-	-	-	72
Total					469	1,480

■ SOYABEANS CBT (5,000bu min; cents/60lb bushel)

Mar	684.50	+7.50	685.50	676.50	22,162	55,812
May	686.50	+7.25	687.00	679.00	3,696	29,396
Jul	690.00	+7.75	691.00	681.50	2,430	33,774
Aug	688.50	+7.75	689.00	683.00	74	5,311
Sep	673.50	+4.50	671.00	671.00	24	677
Nov	671.25	+4.50	671.50	665.00	1,568	13,221
Total					29,957	138,886

■ SOYABEAN OIL CBT (60,000lbs; cents/lb)

Mar	25.62	+0.37	25.63	25.11	8,944	53,882
May	25.99	+0.34	26.00	25.50	3,973	26,671
Jul	26.25	+0.37	26.25	25.79	1,372	17,982
Aug	26.24	+0.38	26.20	26.04	184	4,389
Sep	26.00	+0.38	26.02	25.80	62	2,032
Oct	25.90	+0.25	25.60	25.60	118	1,509
Total					15,240	110,416

■ SOYABEAN MEAL CBT (100 tons; $/ton)

Mar	198.8	+0.9	197.5	195.6	8,690	40,402
May	194.9	+0.3	195.6	194.0	3,143	32,570
Jul	195.9	-	196.8	195.2	1,458	21,607
Aug	197.2	+0.4	197.8	196.5	216	7,516
Sep	198.0	+0.2	198.2	197.7	64	5,084
Oct	198.0	+1.4	198.2	197.5	59	1,362
Total					14,107	114,214

■ POTATOES LIFFE (20 tonnes; £ per tonne)

Mar	70.0	-0.5	-	-	-	-
Apr	75.0	-2.0	76.0	73.0	104	1,089
May	87.0	-	85.0	85.0	15	103
Jun	97.0	-	-	-	-	-
Nov	58.0	+2.0	-	-	-	-
Total					119	1,236

■ FREIGHT (BIFFEX) LIFFE ($10/index point)

Feb	970	-20	971	960	26	253
Mar	1015	-25	1030	1014	196	373
Apr	1110	-5	1110	1091	127	543
Jul	985	-5	985	975	22	150
Oct	1160	-25	1160	1160	5	91
Total					376	1,415

	Close	Prev
BFI	1016	1026

PULP AND PAPER

■ PULPEX OMLX (US$; 24 air dry tons)

	Sett price	Day's change	High	Low	Vol	Open int
Mar	496.00	+18.50	497.00	479.25	141	392
Jun	517.50	+15.00	520.00	503.25	92	319
Total					233	711

FUTURES DATA
All futures data supplied by CMS.

Minor metals from Metal Bulletin
European free market, $ per lb in warehouse, unless otherwise stated (last week's in brackets, where changed). **Antimony:** 99.65%, $ per tonne, 1,710-1,760 (1,700-1,780). **Bismuth:** min. 99.99%, tonne lots 3.45-3.65 (3.30-3.60). **Cadmium:** min. 99.95%, cents a pound, 30.00-35.00. **Cobalt:** MB free market, min. 99.8%, 24.50-25.00; min. 99.3%, 18.85-19.40 (18.50-19.00). **Mercury:** min. 99.99%, $ per 76 lb flask, 140-150. **Molybdenum:** drummed molybdic oxide, 3.65-3.80 (3.60-3.80). **Selenium:** min 99.5%, 2.00-3.00. **Tungsten ore:** standard min. 65%, $ per tonne unit (10kg) WO_3, CIF, 40-52. **Vanadium:** min. 98%, CIF, 6.60-6.80 (6.60-6.90). **Uranium:** Nuexco unrestricted exchange value, 9.65.

SOFTS

■ COCOA LIFFE (10 tonnes; £/tonne)

	Sett price	Day's change	High	Low	Vol	Open int
Mar	1042	+11	1044	1032	736	52,130
May	1066	+13	1070	1052	1,088	24,452
Jul	1087	+14	1088	1077	185	13,859
Sep	1107	+13	1109	1093	387	23,674
Dec	1131	+11	1134	1125	253	29,578
Mar	1157	+11	1158	1145	662	23,150
Total					3,291	184,189

■ COCOA CSCE (10 tonnes; $/tonnes)

Mar	1582	+18	1597	1565	3,132	16,313
May	1618	+21	1632	1598	2,596	32,906
Jul	1648	+21	1662	1633	150	6,611
Sep	1677	+21	1688	1661	24	5,627
Dec	1708	+22	1716	1700	223	12,004
Mar	1736	+19	1745	1732	19	9,401
Total					6,319	86,433

■ COCOA (ICCO) (SDR's/tonne)

Feb 2	Price	Prev. day
Daily	1228.83	1225.32

■ COFFEE LIFFE (5 tonnes; $/tonne)

Mar	1765	+30	1768	1726	2,858	23,925
May	1725	+30	1727	1693	1,134	13,849
Jul	1705	+30	1705	1670	132	2,854
Sep	1685	+28	1680	1685	161	1,367
Nov	1672	+25	-	-	-	69
Total					4,085	42,078

■ COFFEE 'C' CSCE (37,500lbs; cents/lbs)

Mar	178.75	-1.45	178.50	175.00	5,062	17,565
May	170.75	-2.15	173.00	169.00	2,401	7,386
Jul	162.65	-1.85	164.25	160.50	272	3,250
Sep	154.15	-2.15	156.50	152.50	465	1,967
Dec	148.40	-2.15	148.00	145.00	133	1,871
Mar	140.15	-1.85	142.00	140.50	39	369
Total					8,372	32,481

■ COFFEE (ICO) (US cents/pound)

Feb 2	Price	Prev. day
Comp. daily	133.43	133.29
15 day average	131.74	131.35

■ WHITE SUGAR LIFFE (50 tonnes; $/tonne)

Mar	294.6	-2.0	296.5	294.5	2,795	16,319
May	298.0	-0.6	299.0	297.7	2,388	12,264
Aug	301.7	+0.1	302.6	301.3	559	5,306
Oct	297.9	+0.4	298.4	297.1	410	6,022
Dec	301.5	+0.1	301.2	300.3	53	484
Total					6,142	40,828

■ SUGAR '11' CSCE (112,000lbs; cents/lbs)

Mar	11.20	-0.03	11.28	11.18	7,785	72,733
May	10.97	+0.04	11.03	10.92	4,880	55,390
Jul	10.75	+0.06	10.80	10.69	1,169	29,880
Oct	10.76	+0.07	10.81	10.68	1,471	37,753
Mar	10.83	+0.04	10.86	10.77	545	13,010
May	10.80	+0.04	10.79	10.75	1	1,833
Total					15,831	214,381

■ COTTON NYCE (50,000lbs; cents/lbs)

Mar	67.02	-0.18	67.16	66.80	11,748	33,552
May	68.29	-0.19	68.40	68.12	4,343	18,311
Jul	69.56	-0.16	69.65	69.45	2,648	17,229
Oct	71.80	-0.20	71.80	71.50	58	1,992
Dec	73.00	-0.12	73.05	72.75	1,829	16,955
Mar	74.03	-0.11	73.85	73.77	217	880
Total					21,014	90,475

■ ORANGE JUICE NYCE (15,000lbs; cents/lbs)

Mar	97.65	-1.00	99.00	95.60	5,362	19,911
May	100.95	-0.65	101.90	98.75	758	7,012
Jul	103.75	-0.75	104.25	102.00	276	4,998
Sep	106.65	-0.75	105.75	105.75	45	2,946
Nov	108.85	-0.35	109.20	109.00	1	4
Jan	110.85	+1.75	-	-	-	933
Total					6,442	36,181

VOLUME DATA
Open interest and Volume data shown for contracts traded on COMEX, NYMEX, CBT, NYCE, CME, CSCE and IPE Crude Oil are one day in arrears. Volume & Open interest totals are for all traded months.

INDICES

■ Reuters (Base: 18/9/31 = 100)

Feb 3	Feb 2	month ago	year ago
1752.8	1760.6	1748.2	1945.8

■ CRB Futures (Base: 1967 = 100)

Feb 2	Jan 30	month ago	year ago
235.11	234.98	-	-

■ GSCI Spot (Base: 1970 = 100)

Feb 2	Jan 30	month ago	year ago
174.06	174.26	173.29	204.91

LME WAREHOUSE STOCKS (tonnes)

Aluminium	-1,725	to	584,350
Aluminium alloy	-220	to	42,680
Copper	+2,900	to	368,275
Lead	-	to	108,550
Nickel	+186	to	68,054
Zinc	+4,875	to	468,225
Tin	-235	to	11,865

MEAT AND LIVESTOCK

■ LIVE CATTLE CME (40,000lbs; cents/lbs)

	Sett Price	Day's change	High	Low	Vol	Open int
Feb	63.275	-0.175	63.700	63.125	7,887	25,188
Apr	66.375	-0.025	66.800	66.150	15,416	45,239
Jun	67.825	-0.275	68.400	67.650	4,973	25,658
Aug	68.750	-0.400	69.350	68.700	1,669	8,556
Oct	70.475	-0.675	71.100	70.450	542	3,976
Dec	71.450	-0.350	71.950	71.400	77	815
Total					30,571	109,569

■ LEAN HOGS CME (40,000lbs; cents/lbs)

Feb	55.475	-0.475	55.800	55.400	3,969	13,677
Apr	56.425	-0.450	58.850	56.250	5,514	16,009
Jun	63.825	-0.225	64.100	63.600	990	10,952
Jul	63.500	-0.100	63.600	63.150	930	3,562
Aug	61.300	+0.050	61.400	61.000	152	1,151
Oct	58.175	-0.050	58.300	58.075	338	1,395
Total					11,980	47,186

■ PORK BELLIES CME (40,000lbs; cents/lbs)

Feb	51.800	+0.550	51.900	51.000	1,078	3,129
Mar	51.125	+0.200	51.500	50.450	1,433	2,793
May	51.050	-0.050	51.750	50.900	669	2,325
Jul	50.050	+0.200	50.800	50.000	132	1,093
Aug	47.950	+0.150	48.200	47.875	17	209
Total					3,329	9,585

LONDON TRADED OPTIONS

Strike price $ tonne — Calls — — Puts —

■ ALUMINIUM (99.7%) LME	Mar	May	Mar	May
1500				
1525				
1550				
■ COPPER (Grade A) LME	**Mar**	**May**	**Mar**	**May**
1700				
1750				
1800				
■ COFFEE LIFFE	**Mar**	**May**	**Mar**	**May**
1700	84	111	19	86
1750	52	86	37	113
1800	31	66	66	143
■ COCOA LIFFE	**Mar**	**May**	**Mar**	**May**
1025	28	64	11	23
1050	15	50	23	34
1075	8	37	41	46
■ BRENT CRUDE IPE	**Mar**	**Apr**	**Mar**	**Apr**
1550	30	-	-	67
1600	-	59	-	-
1650	7	-	-	-

LONDON SPOT MARKETS

■ CRUDE OIL FOB (per barrel) +or-

Dubai	$13.10-3.15x	-0.35
Brent Blend (dated)	$14.76-4.79	-0.395
Brent Blend (Mar)	$15.33-5.36	-0.355
W.T.I.	$16.61-6.63x	-0.365

■ OIL PRODUCTS NWE prompt delivery CIF (tonne)

Premium Gasoline	$168-170	+2
Gas Oil	$139-141	-3
Heavy Fuel Oil	$61-63	-1
Naphtha	$152-153	-0.5
Jet fuel	$155-157	-2
Diesel	$146-147	-3.5

■ NATURAL GAS (Pence/therm)

Bacton (Mar)	10.20-10.30	-0.125

Petroleum Argus. Tel. London (0171) 359 8792

■ OTHER

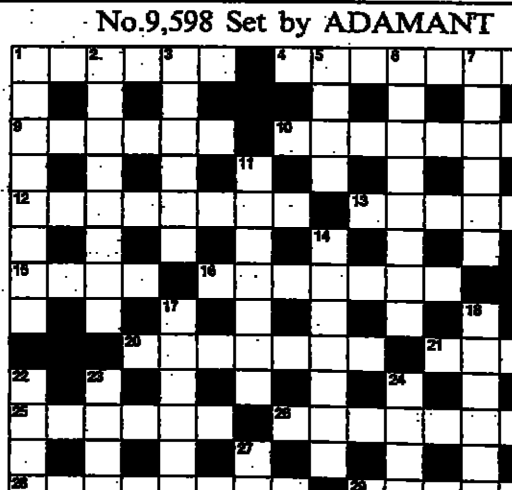
Gold (per troy oz)♣	$297.25	-5.30
Silver (per troy oz)♣	663.00c	+39.0
Platinum (per troy oz.)	$387.00	-2.00
Palladium (per troy oz.)	$238.50	-0.50
Copper	88.0c	
Lead (US prod.)	45.00c	
Tin (Kuala Lumpur)	23.43r	
Tin (New York)	247.5	+1.00
Cattle (live weight)	91.15p	+0.67*
Sheep (live weight)	76.13p	-4.46*
Pigs (live weight)†	73.21p	+7.14*
Lon. day sugar (raw)	$271.60	
Lon. day sugar (wte)	$293.30	-3.70
Barley (Eng. feed)	Unq	
Maize (US No3 Yellow)	£109.00	
Wheat (US Dark North)	Unq	
Rubber (Mar)♥	55.00p	
Rubber (Apr)♥	56.00p	
Rubber (KL RSS No1)	338.00m	+6.00
Coconut Oil (Phil)§	555.0y	
Palm Oil (Malay.)§	597.5	
Copra (Phil)§	$370.0y	
Soyabeans (US)	184.0	
Cotton Outlook'A' index	69.65c	+0.10
Wooltops (64s Super)	370p	

£ per tonne unless otherwise stated. p pence/kg. c cents/lb. r ringgit/kg. m Malaysian cents/kg. y Jan/Feb. x Mar. ♥London Physical. § CIF Rotterdam. ♣ Bullion market close. * Change on week. †Based on n/a head of pigs sold.

JOTTER PAD

CROSSWORD

No.9,598 Set by ADAMANT



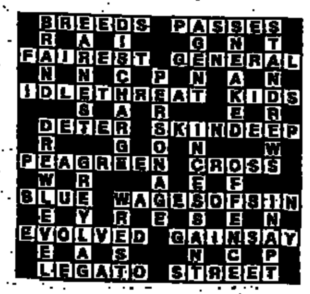
ACROSS

1 Taken start of sonata somewhat lento (6)
4 The introduction of diplomats could alter the sentence (8)
9 Fresh stage having brought in new factors (6)
10 Grow up, Henry! the age of voting is pointless! (8)
12 His message is dawning (8)
13 Accuse of having originally lost a stage of the race in outskirts of Ambleside (6)
15 Feeling sick? No question, it's simple (4)
16 Benefit in degrees for primates (7)
20 Neat overnight accommodation? Neat! (4-3)
21 Was the god in the red at home? (4)
25 Spend time by lake in Germany (6)
26 Possibly half the group surrounded the king (8)
28 Tyneside gets back at grammar school to make savings (4,4)
29 A mechanic is more appropriate (6)
30 They chase the nuns madly around mass (8)
31 The short answer includes lines of conductors (6)

DOWN

1 Looked for church in Red Sea first (8)
2 Mine is on the surface (8)
3 Special introduction to the course (6)
5 Extra deliveries (4)
6 Encourage scheme to start producing vegetable (8)
7 Horseman stole off with leading rein (6)
8 The German ate a pub meal (6)
11 Consigns island into hands of communists (7)
14 Stay with relation about a day in France (7)
17 Having no transport round Europe? That's showing lack of foresight (8)
18 Completely in thrall, but did badly and had to put on external show (8)
19 Catches American spies leaving Renaissance intrigue (8)
22 Stand for splint holding broken section (6)
23 Nothing wrong in coming up to university all together (6)
24 No French quarter given in battle? (6)
27 Go back to the French look (4)

Solution 9,597



مكتبة من الأصل

FT MANAGED FUNDS SERVICE

Offshore Funds

● FT Cityline Unit Trust Prices are available over the telephone. Call the FT Cityline Help Desk on (+44 171) 873 4378 for more details.

OFFSHORE AND OVERSEAS

BERMUDA (FSA RECOGNISED)

Fidelity Currency Funds Ltd

Pembroke Hall, Pembroke, Bermuda
UK, Prof Advisers 0800-414181 Jersey 01534 71696
Private Clients 0800-414161 00 352 250404230
From Overseas (44) 1732 777377 Hong Kong (852) 849 1000

	Init Notes Charge	Selling Price	Buying Price	+ or -	Yield Gr's
A$ Accum		A$20.227	—	+0.002	3.80
C$ Accum		C$19.942		+0.001	3.10
DM Accum		DM39.326		+0.002	3.10
DFl Accum		Dfl32.443		+0.002	[illegible]
ECU Accum		Ecu14.017		+0.001	3.30
FFr Accum		FFr68.868		+0.004	2.30
HK$ Accum		HK$129.17		+0.02	5.30
Lira Accum		L25449		+4	5.20
NZ$ Accum		NZ$43.363			7.40
£ Accum		£14.024		+0.002	6.40
SFr Accum		SFr29.513			0.10
US$ Accum		$24.862		+0.003	4.60
Yen Accum		Y2603.8		—	0.10

Prices for dealing February 3

Jupiter Asset Management (Bermuda) Ltd

PO Box HM1295, Hamilton, Bermuda 001 441 292 2760

Newport Investment Management

20 Reid St, PO Box HM 3388 Hamilton Bermuda

BERMUDA (REGULATED)(**)

GUERNSEY (FSA RECOGNISED)

Royal Bk of Canada O/S Fd Mgrs Ltd

PO Box 246, St Peter Port, Guernsey 01481 723021

Sarasin Funds Mngmt (Guernsey) Ltd

PO Box 246, St Peter Port, Guernsey

GUERNSEY (REGULATED)(**)

IRELAND (FSA RECOGNISED)

AIB Fund Management Ltd

Singer & Friedlander Inv Funds Ltd (u)

21 New Street, Bishopsgate, EC2M 4HR 0171-626 6229

Edgehill Select Group

Egerton Capital European Fund Plc

Emerging Market Growth Fund Plc

Singer & Friedlander Inv Funds Ltd - Contd.

F.I.T. Investment Trust Ltd (u)

Fedsure International Global Funds

Foreign & Colonial Emerging Markets Ltd

IRELAND (REGULATED)(**)

ISLE OF MAN (FSA RECOGNISED)

ISLE OF MAN (REGULATED)(**)

JERSEY (FSA RECOGNISED)

JERSEY (REGULATED)(**)

LUXEMBOURG (FSA RECOGNISED)

Offshore Funds and Insurances

FT MANAGED FUNDS SERVICE

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American Phoenix Investment Portfolios (u)

13 rue Goethe, L-1637 Luxembourg 00 352 40484621

	Init Charge	Notes	Selling Price	Buying Price	+ or -	Yield Gr's
European Multinational Pfolio			Ecu27.64		-0.01	-
European Multinational Pfolio			$29.98		+0.18	-
European Multinational Pfolio			£18.30		+0.01	-
European Multinational Pfolio			L53779		-42	-
European Multinational Pfolio			DM54.48		-0.09	-
Global Multinational Pfolio			Ecu25.22		+0.09	-
Global Multinational Pfolio			$27.35		+0.24	-
Global Multinational Pfolio			£16.70		+0.07	-
Global Multinational Pfolio			L49073		+142	-
Global Multinational Pfolio			DM49.71		+0.1	-
US Growth Companies			$18.27		+0.34	-
US Growth Companies			£11.18		+0.18	-
US Growth Companies			L32775		+417	-
US Growth Companies			DM33.20		+0.39	-
US Real Estate Securities			$16.84		-0.07	-
US Real Estate Securities			£10.28		-0.09	-
US Real Estate Securities			L30205		-308	-
US Real Estate Securities			DM30.60		-0.34	-

BAII Asset Management Ltd

10 Piccadilly, London W1V 0EE 0171 734 3700

	Init Charge	Notes	Selling Price	Buying Price	+ or -	Yield Gr's
International NAV Jan 15 F			$878.42		+1.93	-

Bank Von Ernst & Cie AG

Marktgasse 63/65, 3001 Berne, Switzerland 0041 31 3291111

	Init Charge	Notes	Selling Price	Buying Price	+ or -	Yield Gr's
UK Equity			£19.85		—	-
UK Smaller Co's Eqty			£27.80		—	-
Nth American Equity			$18.65		—	-
US Smaller Co's Eqty			$25.90		—	-
Pacific Basin Equity			$10.76		—	-
Japanese Equity			Y488		—	-
European Equity			DM31.59		—	-
Swiss Equity			SFr18.29		—	-
Sterling Fixed Int			£16.48		—	-
Sterling Fixed Int Div			£10.52		—	-
European Fixed Int			DM14.30		—	-
European Fixed Int Div			DM8.54		—	-
DM Bond Cap			DM11.49		—	-
DM Short Term Cap			DM18.31		—	-
Global Equity			$18.17		—	-
Global Bond			$13.88		—	-
Global Bond Div			$9.37		—	-
Global Managed			DM21.92		—	-
Swiss Franc Short Term Div			SFr10.47		—	-

[illegible]

Foreign & Colonial Portfolios Fd Sicav(u)

47 Boulevard Royal, L-2449 Lux 00 352 4640101

[illegible]

Frontrunner I (u)

[illegible]

GT Global

[illegible]

Morgan Stanley Sicav

C/O First European Transfer Agent S.A.

11 Boulevard Grand-Duchesse Charlotte

L-1331 Luxembourg (352) 254701 511

[illegible]

LUXEMBOURG (REGULATED)(**)

ACM Offshore Funds

Growth Funds

[illegible]

Credit Suisse Asset Mgmt Funds - Contd.

[illegible]

Merrill Lynch Asset Management - Contd.

[illegible]

Swiss Bank Corporation - Contd.

[illegible]

OFFSHORE INSURANCES

[illegible]

Equitable Life (International)

[illegible]

FT MANAGED FUNDS SERVICE

Offshore Insurances and Other Funds

● FT Cityline Unit Trust Prices are available over the telephone. Call the FT Cityline Help Desk on (+44 171) 873 4378 for more details.

	Selling Price	Buying Price	+ or -	Yield Gross
Old Mutual International (Isle of Man) Ltd				
Victory Hse, Prospect Hill, Douglas, IoM				01624 662693
Distribution Fund–Deferred	75.89		+1.73	–
Distribution Fund–Quarterly	[illegible]		+0.55	5.44
Distribution Fund–Half Yearly	[illegible]		+0.85	6.64
European Equity	200.39	215.47	+2.32	–
Far Eastern Equity	£1.3319	1.4321	[illegible]	–
North American Equity	[illegible]	[illegible]	[illegible]	–
UK Equity	238.40	256.34	+8.43	–
UK Gilt & Fixed Int	137.48	147.82	+0.01	–
Dollar Deposit	$0.8048	0.8653	[illegible]	–
Sterling Deposit	115.85	124.57	+0.06	–
International Managed	154.51	166.29	+1.73	–
PanEuroLife societe anonyme				
7, Rue de la Chapelle L-1325 Lux				00 352 456730
Premier Life				
Professional Investment Consultants				
Aravis Capital Advisors LLC				
Aravis-Clipper Ltd	$741.79		–	–
Arc Investment Company Ltd				
Ardent Investment Management Limited				
Arisaig Partners (BVI) Ltd				
Arisaig Asian Small Companies Fund NAV Feb 2	$7.86		–	–
Aristocrat Capital Management Ltd				
Aristocrat Endeavor Fd	$22.77		–	–
Arnhold and S. Bleichroeder, Inc				
Asia Pacific Securities Corp Ltd				
Asian Convertibles & Income Fd (Cayman)				
NAV Jan 2	$11.18		–	–
Atlantico Investment Ltd				
Atlantis Fund Management (Guernsey) Ltd				
Atlas Management Limited				
Managed	$9.69	10.78	–	–
Aurum Funds				

[illegible]

OTHER OFFSHORE FUNDS

[illegible]

The Financial Times plans to publish a Survey on

Danish Banking & Finance

on Tuesday April 7

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or Ema Pio

Tel: +45 3313 4441 Fax: +45 3393 5335

or your usual Financial Times representative

FT Surveys

	Selling Price	Buying Price	+ or -	Yield Gross
Wharton Capital Investment Management Ltd				
Wharton Asian Equity Linked Fd	$10.40		–	–
Worldwide Limited				
NAV Dec 31	$92.05		–	–
Xeryus Fund Management Ltd				
Xeryus Portfolio	$1000		–	–
Xiphias International Investment Fd Ltd				
Xiphias Global Growth	$12.99		–	–
Xiphias Int ECU Acc	Ecu1.0198		–	–
Zanett Lombardier Ltd				
NAV Dec 31	$273.41		–	–
Zweig–DiMenna International Limited				
NAV Jan 30	$20399		–	–

● MANAGED FUNDS NOTES

Prices are in pence unless otherwise indicated and those designated $ with no prefix refer to U.S. dollars. Yields % allow for all buying expenses. Prices of certain older insurance linked plans subject to capital gains tax on sales.
PSA - Financial Services Authority
(*) Funds not PSA recognised. The regulatory authorities for these funds are
Bermuda - Bermuda Monetary Authority
Guernsey - Financial Services Commission
Ireland - Central Bank of Ireland/Irish Department of Enterprise and Employment
Isle of Man - Financial Supervision Commission
Jersey - Financial Services Department
Luxembourg - Institut Monétaire Luxembourgeois.
Initial charge - Charge made on sale of units.
Selling price - Bid or redemption price.
Buying price - Offer or issue price.
OEIC - Open Ended Investment Company
Time - The time shown alongside the fund manager's name is the time of the fund's valuation point unless indicated by one of the following symbols:
(¶) 0001 to 1100 hours
(§) 1101 to 1400 hours
(‡) 1401 to 1700 hours
(†) 1701 to midnight.
E Exit charge on sale of units.
C Manager's periodic charge deducted from capital.
H Historic pricing F - Forward pricing
a Distribution free of UK taxes.
p Periodic premium insurance plans.
s Single premium insurance.
e Designated as a UCITS (Undertakings for Collective Investment in Transferable Securities).
x Offered price includes all expenses except agent's commission.
z Previous day's price.
§§ Guernsey gross.
♦ Yield before Jersey tax.
† Ex-subdivision. xd - Ex-dividend.
‡ Only available to charitable bodies.
◊ Yield column shows annualised rate of NAV increase.

The fund prices published in this edition are also available at the Financial Times' web site, http://www.FT.com

LONDON SHARE SERVICE

ALCOHOLIC BEVERAGES

BANKS, RETAIL

BREWERIES, PUBS & REST

BUILDING MATS. & MERCHANTS

CHEMICALS

CONSTRUCTION

CONSTRUCTION - Cont.

DISTRIBUTORS

DIVERSIFIED INDUSTRIALS

ELECTRICITY

ELECTRONIC & ELECTRICAL EQPT

ENGINEERING

ENGINEERING - Cont.

ENGINEERING, VEHICLES

EXTRACTIVE INDUSTRIES

EXTRACTIVE INDUSTRIES - Cont.

FOOD PRODUCERS

GAS DISTRIBUTION

HEALTH CARE

HEALTH CARE - Cont.

HOUSEHOLD GOODS & TEXT

HOUSEHOLD GOODS & TEXT - Cont.

INSURANCE

INVESTMENT TRUSTS

INVESTMENT TRUSTS - Cont.

INV TRUSTS SPLIT CAPITAL

مكتبة الأصل

LONDON SHARE SERVICE

INV TRUSTS SPLIT CAPITAL - Cont.

OTHER INVESTMENT TRUSTS

INVESTMENT COMPANIES

LEISURE & HOTELS

LIFE ASSURANCE

MEDIA

MEDIA - Cont.

OIL EXPLORATION & PRODUCTION

OIL, INTEGRATED

OTHER FINANCIAL

PAPER, PACKAGING & PRINTING

PHARMACEUTICALS

PROPERTY

PROPERTY - Cont.

RETAILERS, FOOD

RETAILERS, GENERAL

RETAILERS, GENERAL - Cont.

SUPPORT SERVICES

SUPPORT SERVICES - Cont.

TELECOMMUNICATIONS

TOBACCO

TRANSPORT

TRANSPORT - Cont.

WATER

AIM

AIM - Cont.

The Alternative Investment Market, designed primarily for small companies, is regulated by the London Stock Exchange but has less demanding rules than the SE Official List.

AMERICANS

CANADIANS

SOUTH AFRICANS

	Notes	Price	+ or -	52 week high	52 week low	Volume '000s	Yld Gr's	P/E
Anglo Am Ind R		£23¼		*£27⅞	£23¼	–	2.9	–
Barlow	♣	£5⅞	–⅛	£8⅞	£4⅞	–	2.8	–
Gold Flds Prop R		105	–¼	187	98¾	–	7.6	8.7
SA Brews	†	£16⅛	–⅛	£23⅛	£13⅜	–	2.3	–
Standard Bank		£28⅛	–¼	£30	£22⅜	–	1.9	–
Tiger Oats		937		1100	780	–	2.0	Φ
Tongaat-Hulett		749½	–3	780	721¼	–	2.3	Φ

TRADED INDEX SECURITIES

	Notes	Price	+ or -	52 week high	52 week low	Volume '000s	Yld Gr's	P/E
FTSE 100 TRAINS		[illegible]		£58000	2472	–	–	–

GUIDE TO LONDON SHARE SERVICE

Prices and trading volumes for the London Share Service are delivered by Extel, part of Financial Times Information.

Company classifications are based on those used for the FTSE Actuaries Share Indices.

Closing mid-prices are shown in pence unless otherwise stated. For FTSE 100 Index constituents and reserves marked † in the Trading Volume table on the LSE page, last trade prices at or prior to 4:30pm market close are shown, as these shares are now traded on the Stock Exchange Electronic Trading System ("SETS"). Highs and lows are based on intra-day mid-prices/last trades over a rolling 52 week period.

Trading Volumes are end of day accumulated totals. Dashes indicate that either no trade has taken place during the day or the data is not available for those particular securities. Volumes shown for foreign securities are based on London trading.

Where stocks are denominated in currencies other than sterling, this is indicated after the name. Prices shown for some of these foreign securities are converted into sterling from latest available local Stock Exchange prices.

Symbols referring to dividend status appear in the notes column daily as a guide to yields and P/E ratios. Dividends and Dividend covers are published on Monday.

Earnings used in calculations are based on IIMR 'Headline Earnings' formula.

Price/earnings ratios are based on latest annual reports and accounts and, where possible, are updated on interim figures.

Yields are based on mid-prices, are gross, adjusted for a dividend tax credit of 20 per cent and allow for value of declared distribution and rights.

Estimated Net Asset Values (NAVs) are shown for Investment Trusts, in pence per share, along with the percentage discounts (Dis) or premiums (Pm –) to the current closing share price. The NAV basis assumes prior charges at par value, convertibles converted and warrants exercised if dilution occurs.

- * Highs and lows marked thus have been adjusted to allow for capital changes
- † Interim since increased or resumed
- ‡ Interim since reduced, passed or deferred
- Φ Figures or report awaited
- ♥ Rule 2.1(a)(v) Overseas incorporated companies listed on an approved exchange.
- ♣ Free annual/interim report available, see details below.
- ‡‡ Rule 4.2(a) Irish incorporated non-listed companies.
- # Price at time of suspension
- ¶ Indicated dividend yield after pending scrip and/or rights issue
- ♦ Merger bid or reorganisation in progress
- § Forecast dividend yield; p/e based on earnings updated by latest interim statement.
- ♠ Unregulated collective investment scheme.

a Yield based on annualised dividend. b Figures based on prospectus or other offical estimates. β Assumed dividend yield after rights issue. h Assumed dividend yield after scrip issue. g Rights issue pending. q Earnings based on preliminary figures. s Dividend yield excludes a special payment. I Indicated dividend yield, p/e ratio based on latest annual earnings. u Forecast, or estimated annualised dividend yield, p/e based on previous year's earnings. z Dividend yield includes a special payment. F Yield based on prospectus or other offical estimates for 1998-99. G Assumed yield after pending scrip and/or rights issue. H Yield based on prospectus or other offical estimates for 1997. K Yield based on prospectus or other offical estimates for 1998. L Estimated annualised yield, p/e based on latest annual earnings. M Yield based on prospectus or other official estimates for 1997-98. N Dividend is paid in whole or part as a FID (Foreign Income Dividend). R Forecast annualised yield, p/e based on prospectus or other official estimates. W Pro forma figures. Z Dividend yield to date.

Abbreviations: xd ex dividend; xc ex scrip issue; xr ex rights; xa ex all; xd ex capital distribution.

This service is available to companies whose shares are regularly traded in the United Kingdom for a fee of £1495 a year for each security shown, subject to the Editor's discretion.

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The share prices printed on these pages are also available on the Internet at http://www.FT.com.

LONDON STOCK EXCHANGE

More bid action attracts new buyers to equities

MARKET REPORT

By Steve Thompson,
UK Stock Market Editor

Takeover stories continued to drive London shares higher yesterday, thanks to a FTSE 100 bid, another in the FTSE 250 and action across the smaller stocks.

The FTSE 100 index rallied after an uncomfortable start to the day, caused by intermittent flurries of profit-taking, to end 13.8 up at 5,612.8, taking its sequence of record closing highs to five and its run of gains to seven.

It was the hostile bid for Argos, the catalogue shopping chain, from Great Universal Stores, that captured the stock market's imagination, igniting a retail sector that has mostly underperformed the wider market over recent years.

An increased offer for Energy Group, from Pacificorp, the US utility company, had been expected, as had the offer from Australia's AMP for Henderson, the fund management group. Among the smaller companies there was an agreed bid for Gibbs Mew, the pubs group, from Enterprise Inns and a bid approach for Beales Hunter, the electronics company.

The bid action in the market offset a fairly hefty dose of profit-taking in the pharmaceuticals arena, which triggered Footsie's 140-point leap on Monday when the market had its first opportunity to react to the proposed merger of Glaxo Wellcome and SmithKline Beecham.

For a change the FTSE 250, inspired by the big rise in Argos, captured the limelight, pushing up 37.5 to 4,915.9. That gain brought the 250 index to within 50 points of its previous record closing high of 4,963.8, set in mid-October last year.

The 250 index includes several high street retailers, many of which moved higher in sympathy with Argos yesterday, including MFI, Arcadia and Liberty. It also includes most of the large housebuilders, which made rapid progress in the wake of exceptionally good results from Bryant Group.

The leaders, on the other hand, had to cope with bouts of often heavy profit-taking from domestic and international institutions, which have been carrying overweight positions in the pharmaceuticals sector for some time. Banks and insurance stocks suffered from the same kind of selling pressure as the drugs stocks.

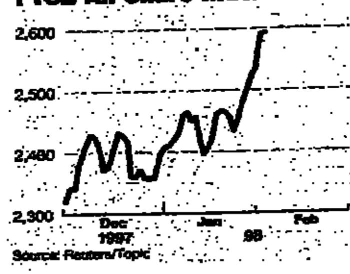
But the overwhelming trend in the top 100 stocks remained bullish, with dealers noting keen support from private investors for most of the apparent takeover targets.

The FTSE SmallCap index rose 3.9 to 2,388.6, not far short of the day's best of 2,389.0, helped along by actual and rumoured takeover stories.

The market now enters a period of genuine uncertainty, awaiting decisions on interest rate policy in the UK, US and Germany, and is also poised to react to Friday's non-farm payroll report from the US. Few expect rate changes in either the US or Germany although some fear that the Bank of England's monetary policy committee could yet raise UK rates.

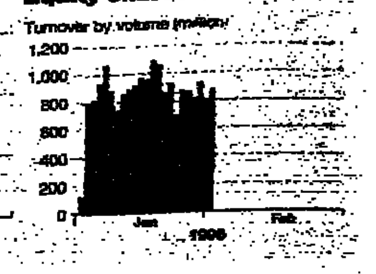
Turnover in equities was 885.6m shares, of which just under half was in non-Footsie stocks.

FTSE All-Share Index



Source: Reuters/Topic

Equity shares traded



Indices and ratios

FTSE 100	5612.8	+13.8
FTSE 250	4915.9	+37.5
FTSE 350	2668.4	+9.0
FTSE All-Share	2597.58	+8.52
FTSE All-Share yield	2.98	3.00

FT 30	3414.9	+5.0
FTSE Non-Fins p/e	21.22	21.16
FTSE 100 Fut Mar	5630.0	+13.5
10 yr Gilt yield	6.14	6.15
Long gilt/equity yld ratio	2.08	2.06

Best performing sectors

1 Alcoholic Beverages .... +2.7
2 Construction .... +2.4
3 Retailers: General .... +2.0
4 Extractive Inds .... +2.0
5 Chemicals .... +1.8

Worst performing sectors

1 Pharmaceuticals .... −2.5
2 Leisure & Hotels .... −1.0
3 Consumer Goods .... −1.0
4 Life Assurance .... −0.5
5 Diversified Inds .... −0.4

Argos battle looms

Dealers were bracing themselves for a bid battle in the stores sector after Great Universal Stores surprised the market with a £1.6bn offer for Argos. The catalogue retailer immediately rejected the 570p a share offer.

Argos shares raced ahead yesterday following news of the offer, gaining 188 or 42.5 per cent to 630p as talk of a white knight did the rounds. That talk settled on Kingfisher, with Littlewoods also mentioned. But one specialist ruled out such a move saying, "I doubt Littlewoods will be going for this one at this stage."

Few expect Argos to remain independent even if no alternative bid is tabled. The group has issued three profits warnings in just over a year and revealed a drop in sales over the Christmas period. The shares had underperformed the market by 22 per cent over a 12-month period before yesterday's strong advance. One analyst said: "It will be difficult for Argos to generate a meaningful defence. Their stock in the market is pretty low at the moment."

However, analysts suggested GUS will have to raise its offer if it is to win the bid. An improved offer around the 650p a share mark was being talked about with 700p regarded as a knockout bid.

GUS shares rose 29 to 762p, while those of Kingfisher hardened 2½ to 961p.

Exploration and production stocks were well bid following a a positive note on the sub-sector from Morgan Stanley.

The broker turned buyer on Lasmo and also recommended Enterprise because of the sub-sector's 25 per cent underperformance against European stocks. Enterprise rose 21 to 590½p and Lasmo 6¼ to 263¾p.

Reuters falls

Even the bears were beginning to finger the buy buttons as Reuters fell a further 28 to 520p to leave it off 100p or 16 per cent over four trading sessions. During that time, the Footsie has hit new highs every day.

The stock has suffered a buyers' strike since it emerged that a subsidiary of the news and financial information group faces a grand jury inquiry in the US.

One analyst said US inquiries are likely to drag on for some time and the stock could be dead money at least until the figures next week.

However, Mr Brian Newman of Henderson Crosthwaite pointed out that £1.6bn had already been wiped off the market value over the past four sessions and the selling had gone too far.

"It is trading at a p/e discount to the market which is frankly incredible. Historically, it has traded at a premium of between 20 and 60 per cent," he said, adding that he intended to publish a buy note today.

The bid battle for Energy Group moved forward as PacifiCorp of the US raised its offer for the utility to 765p a share.

If the bid is successful, shareholders will not receive the cash for 90 days. Thus the real value of the offer, with the loss of interest over that period factored in, is only about 750p a share.

The stock started above that level and jumped a further 21 to 775½p as the market took a strong view that either Texas Utilities or Nomura would come to the table with a firm offer.

Both have shown their hand before. However, analysts said PacifiCorp's offer had left little room for manoeuvre and was well ahead with the due diligence and regulatory approval.

One of the strongest rises in the FTSE 100 was achieved by Siebe, which gained 67 to £11.47, helped by a reiteration of an "accumulate" stance by Merrill Lynch.

However, volume in Siebe was a thin 2.3m, which Paul Compton at Merrills said showed the reluctance of investors to sell engineering shares after their severe underperformance. "It would not take a lot of good news for this sector to rally strongly," he added.

The positive sentiment spread to Smiths Industries, which gained 20 to 785p, and TI Group, which rose 25 to 462p.

Results from Bryant Group beat expectations and saw the shares power ahead, while the positive sentiment spread to other housebuilding-related stocks.

Bryant achieved one of the best rises in the FTSE 250, with its gain of 9 to 122p.

George Wimpey rose 9 to 102¼p in volume of 4.4m, Beazer Group advanced 13¼ to 189½p and Bellway gained 18½ to 366p.

Bryant's strong results, and the positive reaction of similar stocks, prompted suggestions that the sector may finally be seeing the re-rating some analysts think it deserves.

The building and construction sector staged a 2.5 per cent rally yesterday. Merrill Lynch has told clients the sector is about 15 per cent underrated, and added: "We do not believe that earnings will collapse as existing ratings imply."

Tate warns

Tate & Lyle was the worst-performing stock in the FTSE 250 after it wrong-footed the market by issuing a profits warning at its annual meeting. The shares lost 41 to 507p.

With several brokers having issued "buy" recommendations on the stock in the last few weeks, analysts had expected a strong and positive statement. "This is not what we had expected. We thought things were going well," said one.

BSkyB bounced sharply after the company reported first-half results in line with forecasts and reassured investors about its digital launch.

The shares gained 19 to 361p recovering from a recent 28-month low of 340p.

The information technology sub-sector continued its advance, adding to the 18 per cent gain chalked up since it was created a month ago. The largest stock in the sector, Misys, was up 7¼ at £23.52½, while Logica gained 22½ to £13.67½.

Graham Brown at Sutherlands has downgraded Misys and Logica from "strong buy" to "buy" after recent rises in the share prices. He has told clients: "We can now foresee the establishment of information technology as a separate index sector as planned at the end of 1998, given that the sub-sector now represents over 1 per cent of the FTSE All-Share."

Pace Micro Technology enjoyed one of the best advances, with a rise of 33 per cent or 10 to 40p after it announced a substantial order for digital set-top boxes from BSkyB.

Beales Hunter gained 12 to 70½p after the refrigeration engineer said it had received bid approaches "at prices significantly above the current market price".

FT 30 INDEX

	Feb 3	Feb 2	Jan 30	Jan 29	Jan 28	Yr ago	*High	*Low
FT 30	3414.9	3409.9	3358.6	3340.8	3336.1	2641.6	3430.3	2668.8
Ord. div. yield	3.17	3.17	3.24	3.27	3.29	4.06	4.22	3.29
P/E ratio net	22.40	22.39	21.86	21.70	21.57	17.53	22.83	15.80
P/E ratio nil	22.20	22.19	21.68	21.51	21.38	17.36	22.02	15.71

FT 30 since compilation: high 3430.3 16/10/97; low 49.4 26/06/40. Base Date 1/7/35.

FT 30 hourly changes

Open	9	10	11	12	13	14	15	16	High	Low
3409.9	3394.8	3402.1	3406.9	3412.4	3408.9	3411.2	3411.5	3413.8	3418.0	3393.7

	Feb 3	Feb 2	Jan 30	Jan 29	Jan 28	Yr ago
SEAQ bargains	80,269	83,960	63,064	66,329	69,589	47,163
Equity turnover (£m)†	-	NA	2213.1	2045.5	2322.4	666.3
Equity bargains†	-	NA	50,289	54,435	58,799	16,330
Shares traded (ml)†	-	NA	610.9	579	648.9	228.1

†Excluding intra-market and overseas turnover but including Crest turnover.

 *For 1997/98.

■ London market data

Rises and falls*		52 Week highs and lows		LIFFE Equity options	
Total Rises	805	Total Highs	212	Total contracts	38,249
Total Falls	734	Total Lows	69	Calls	22,376
Same	1,494			Puts	15,873

Feb 3 *Data based on Equity shares listed on the London Share Service.

FUTURES AND OPTIONS

■ FTSE 100 INDEX FUTURES (LIFFE) £25 per full index point (APT)

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	5600.0	5627.0	+1.0	5637.0	5583.0	8706	62214
Jun	-	5690.0	+1.0	-	-	0	1596

■ FTSE 250 INDEX FUTURES (LIFFE) £10 per full index point

	Open	Sett price	Change	High	Low	Est. vol	Open int.
Mar	-	4908.0	+1.0	-	-	0	6199

■ FTSE 100 INDEX OPTION (LIFFE) (*5606) £10 per full index point

	5450		5500		5550		5600		5650		5700		5750		5800	
	C	P	C	P	C	P	C	P	C	P	C	P	C	P	C	P
Feb	[illegible]															
Mar	[illegible]															
Apr	327½	137½	297	156	266	174½	234½	193½	202½	[illegible]						
May	379	171½	347	190½	316	209½	285	228½	255½	[illegible]						
Jun†			402	223			339½	259								

Calls 4,307 Puts 1,179

■ EURO STYLE FTSE 100 INDEX OPTION (LIFFE) £10 per full index point

	5425		5475		5525		5575		5625		5675		5725		5775	
Feb	229½	32	189	41½	151½	53½	117½	69½	88	[illegible]						
Mar	282½	92½	258	105½	227½	120½	190	139½	169	[illegible]						
Apr	347½	133	312	146½	278½	162	246½	179½	216½	[illegible]						
Jun	451½	193½			384	223½			323	[illegible]						
Sept	576½	256			511	286½			446	[illegible]						

Calls 6,718 Puts 8,180 * Underlying index value. Premiums shown are based on settlement prices. † Long dated expiry months.

LONDON RECENT ISSUES: EQUITIES

Issue price p	Amt paid up	Mkt. cap (£m.)	1997/98 High	1997/98 Low	Stock	Close price p	+/-	Net div.	Div. cov.	Grs yld	P/E net
-	F.P.	-	95	93½	Abbey Nat Dublin B	93½		-	-	-	-
-	F.P.	2,805	520	500	Diageo B	510		-	-	-	-
§25	F.P.	1.42	35½	29½	†General Inds	35½		-	-	-	-
135	F.P.	5.06	144½	139½	†Longmead	140½		L5.01	2.9	4.5	9.6
§110	F.P.	112.4	124½	93	Marchpole	96½	−1	R3.65	2.1	4.7	12.8
§102	F.P.	23.2	102½	102½	†Razorback Vhcls	102½		-	-	-	-
-	F.P.	7.10	82½	57½	Richards Grp	62	+4½	-	-	-	-
§	F.P.	-	8	5	Sanctuary Wrts	5⅛		-	-	-	-
§	F.P.	175.6	112	96½	Second Scot Natl	110		-	-	-	12.8
§	F.P.	100.1	101¾	99½	Do Zero Div Prf	101¼		-	-	-	-

† Alternative Investment Market. § Placing price. * Introduction. For a full explanation of all other symbols please refer to The London Share Service notes.

FTSE GOLD MINES INDEX

	Feb 2	% chg on day	Jan 30	Year ago	Gross div yield %	P/E ratio	52 week High	52 week Low
Gold Mines Index (33)	1114.94	−0.3	1117.83	1698.33	2.47	-	1897.49	881.23
■ Regional Indices								
Africa (14)	1212.28	+0.8	1202.76	1944.69	5.38	22.22	2333.56	921.78
Australasia (7)	1392.79	−1.9	1420.03	1952.42	2.54	17.82	2124.22	933.63
North America (12)	1054.55	−0.4	1058.36	1801.04	1.22	38.24	1780.56	864.86

 Figures in brackets show number of companies. Basis US Dollars. Base Value: 1000.00 31/12/92. † Partial. Latest prices were unavailable for this edition.

FTSE Actuaries Share Indices — The UK Series

Produced in conjunction with the Faculty and Institute of Actuaries

	Feb 3	Day's chge%	Feb 2	Jan 30	Year ago	Gross yield%	Net yield%	Net cover	P/E ratio	Xd adj. ytd	Total Return
FTSE 100	5612.8	+0.2	5599.0	5458.5	4260.9	2.89	2.39	2.07	20.83	2.96	2424.58
FTSE 250	4915.9	+0.8	4878.4	4861.5	4575.7	3.39	2.81	1.86	19.79	6.02	2084.15
FTSE 250 ex IT	4940.8	+0.9	4899.2	4892.9	4616.5	3.51	2.91	1.91	18.69	6.05	2102.03
FTSE 350	2668.4	+0.3	2659.4	2602.9	2107.8	2.98	2.46	2.03	20.64	1.74	2355.72
FTSE 350 ex IT	2674.4	+0.3	2665.2	2608.8	-	3.00	2.48	2.04	20.43	1.72	1210.92
FTSE 350 Higher Yield	2669.7	+0.1	2666.5	2594.9	2021.8	3.85	3.20	1.90	17.12	1.34	2006.81
FTSE 350 Lower Yield	2683.0	+0.6	2667.9	2626.5	2201.3	2.11	1.72	2.27	26.05	2.15	1930.82
FTSE SmallCap	2388.60	+0.2	2384.66	2372.68	2314.15	3.02	2.43	1.60	25.94	2.22	2058.40
FTSE SmallCap ex IT	2375.42	+0.2	2370.39	2365.33	2325.55	3.22	2.60	1.67	23.28	1.95	2064.62
FTSE All-Share	2597.58	+0.3	2589.06	2536.68	2061.20	2.98	2.46	2.00	20.90	1.74	2327.52
FTSE All-Share ex IT	2605.80	+0.3	2596.95	2544.47	-	3.01	2.48	2.02	20.56	1.70	1201.10

■ FTSE Actuaries Industry Sectors

	Feb 3	Day's chge%	Feb 2	Jan 30	Year ago	Gross yield%	Net yield%	Net cover	P/E ratio	Xd adj. ytd	Total Return
10 RESOURCES(22)	4489.39	+1.2	4435.12	4447.06	4162.40	3.48	2.85	1.81	19.91	0.00	2031.95
12 Extractive Industries(5)	3205.82	+2.0	3143.44	3052.63	3798.19	4.40	3.89	1.88	15.10	0.00	988.05
15 Oil, Integrated(4)	4922.95	+1.1	4871.13	4901.89	4328.74	3.53	2.85	1.77	20.03	0.00	2293.67
16 Oil Exploration & Prod(13)	3396.67	+1.5	3347.68	3385.64	3653.13	1.66	1.37	2.32	32.49	0.00	2089.68
20 GEN INDUSTRIALS(224)	1928.12	+1.0	1909.80	1892.00	2027.59	3.98	3.39	2.00	15.67	1.29	1118.03
21 Construction(38)	1340.86	+2.4	1309.85	1307.75	1346.35	3.45	2.78	2.27	15.99	0.44	1162.11
22 Building Matls & Merchs(27)	1643.51	+0.2	1640.70	1623.01	1674.85	4.63	3.82	1.93	13.97	0.45	881.05
23 Chemicals(25)	2565.11	+1.8	2519.08	2488.65	2369.09	4.05	3.50	1.65	18.78	0.46	1294.44
24 Diversified Industrials(11)	1289.40	−0.4	1294.43	1284.21	1490.83	4.44	4.09	2.13	13.23	10.72	787.02
25 Electronic & Elect Equip(27)	2185.03	+0.2	2181.33	2127.18	2334.97	4.07	3.38	1.57	18.37	0.00	1192.92
26 Engineering(61)	2576.65	+1.2	2545.67	2521.31	2608.30	3.74	3.29	2.65	12.63	0.79	1640.96
27 Engineering, Vehicles(11)	3385.84	+1.3	3342.66	3361.08	2939.77	2.89	2.43	0.02	80.00†	0.26	1847.15
28 Paper, Pckg & Printing(24)	2004.17	−0.1	2006.35	1994.15	2480.86	5.23	4.32	1.91	12.54	0.48	890.59
30 CONSUMER GOODS(90)	5777.25	−1.0	5834.49	5408.12	3869.95	2.61	2.26	1.84	25.98	2.44	2257.37
32 Alcoholic Beverages(6)	3298.45	+2.7	3210.56	3232.27	2641.50	3.59	3.49	2.45	14.47	0.31	1270.80
33 Food Producers(24)	3479.22	+0.8	3451.17	3433.05	2637.91	3.10	2.56	1.93	20.87	8.33	1669.45
34 Household Goods & Texts(24)	3150.79	−0.1	3152.54	3130.82	2655.59	3.99	3.41	1.92	16.29	0.73	1310.60
36 Health Care(14)	2432.92	+0.7	2416.43	2387.89	2161.63	2.11	1.76	1.81	32.85	0.83	1540.21
37 Pharmaceuticals(19)	10681.29	−2.5	10950.95	9809.44	6105.26	1.74	1.46	1.70	42.23	0.03	3783.45
38 Tobacco(3)	4844.14	+0.3	4831.49	4778.83	4062.11	5.85	5.17	1.60	13.38	0.00	1322.12
40 SERVICES(280)	3010.80	+0.7	2988.94	2979.13	2636.47	2.78	2.25	1.95	23.05	4.43	1642.88
41 Distributors(28)	2463.03	+1.7	2422.97	2413.09	2838.90	3.79	3.08	2.05	16.09	0.00	955.15
42 Leisure & Hotels(27)	3434.89	−1.0	3469.80	3491.09	3461.41	2.80	2.24	2.18	20.47	17.12	1827.29
43 Media(42)	3898.75	+0.2	3890.21	3893.22	4257.59	2.62	2.17	1.92	24.80	2.52	1456.77
44 Retailers, Food(14)	2913.95	+0.7	2893.62	2928.53	2028.88	2.92	2.34	2.30	18.60	0.00	1980.34
45 Retailers, General(49)	2320.33	+2.0	2275.05	2279.92	2043.91	3.05	2.44	2.33	17.56	5.49	1400.59
46 Telecommunications(10)	3243.71	+0.4	3229.97	3158.06	2234.55	2.71	2.19	1.48	31.08	3.89	1577.00
47 Breweries, Pubs & Rest.(24)	3740.10	+0.1	3735.00	3762.98	3339.75	3.18	2.54	2.31	17.08	11.78	1895.94
48 Support Services(61)	3970.23	+1.3	3920.45	3867.83	2909.00	1.46	1.19	2.30	37.31	0.42	2601.64
49 Transport(25)	2963.43	+1.0	2934.04	2915.84	2747.39	3.46	2.81	1.29	28.13	4.78	1308.69
60 UTILITIES(23)	3790.42	+0.9	3757.97	3786.33	2679.85	4.15	3.32	1.72	17.54	4.81	1786.83
62 Electricity(9)	4240.65	+0.8	4206.85	4244.97	2911.38	4.50	3.60	2.13	13.06	3.84	2444.60
64 Gas Distribution(2)	2958.34	+1.6	2912.77	2941.23	1540.97	2.20	1.76	‡	‡	0.00	1694.43
68 Water(12)	3244.37	+0.3	3233.17	3241.78	2504.31	5.26	4.21	2.21	10.74	10.26	1970.56
69 NON-FINANCIALS(639)	2568.49	+0.4	2559.16	2503.55	2134.24	3.11	2.59	1.89	21.22	2.22	2068.43
70 FINANCIALS(109)	5441.88	+0.3	5426.85	5340.06	3815.26	2.72	2.20	2.43	18.93	0.34	2481.83
71 Banks, Retail(12)	8063.21	+0.4	8028.99	7635.26	5598.92	2.60	2.08	2.53	19.00	0.00	2783.61
73 Insurance(17)	2428.40	+0.4	2418.87	2387.49	1707.67	3.84	3.00	2.77	12.42	0.20	1972.58
74 Life Assurance(6)	6843.23	−0.5	6875.56	6849.94	4402.27	2.67	2.19	2.27	20.59	0.00	3012.87
77 Other Financial(25)	4109.35	+0.8	4078.18	4087.01	3085.55	2.54	2.08	2.28	21.55	0.28	2474.55
79 Property(46)	2324.84	−0.2	2330.64	2394.45	1820.31	2.77	2.28	1.44	31.22	1.69	1511.52
80 INVESTMENT TRUSTS(119)	3574.13	−0.1	3576.74	3501.69	3283.25	2.18	1.73	1.18	48.94	4.34	1292.67
89 FTSE All-Share(867)	2597.58	+0.3	2589.06	2536.68	2061.20	2.98	2.46	2.00	20.90	1.74	2327.52
105 FTSE All-Share ex IT(748)	2605.80	+0.3	2596.95	2544.47	-	3.01	2.48	2.02	20.56	1.70	1201.10
Information Technology	1206.59	+1.0	1194.53	1179.98	-	0.66	0.52	2.69	70.97	0.28	1206.89
FTSE Fledgling	1299.17	+0.1	1298.51	1292.70	1299.78	3.42	2.74	1.41	26.04	1.99	1425.58
FTSE Fledgling ex IT	1316.42	—	1316.13	1313.31	1320.48	3.83	3.06	1.45	22.53	2.08	1448.76
FTSE AIM	981.2	+0.6	975.1	973.6	-	1.16	0.93	0.63	80.00†	0.40	903.53

■ Hourly movements

	Open	9.00	10.00	11.00	12.00	12.10	14.00	15.00	16.10	High/day	Low/day
FTSE 100	-	5577.1	5584.3	5590.1	5600.9	5601.6	5601.4	5604.5	5604.7	5612.8	5574.1
FTSE 250	-	4891.2	4904.0	4907.5	4910.8	4911.2	4912.1	4913.2	4914.5	4915.9	4875.1
FTSE 350	-	2652.1	2656.1	2658.7	2663.3	2663.6	2663.6	2664.9	2665.1	2668.4	2650.6
FTSE SmallCap	2386.62	2386.07	2386.59	2387.01	2387.94	2388.22	2388.67	2388.64	2388.31	2388.96	2385.94
FTSE All-Share	-	2582.50	2586.24	2588.66	2592.86	2593.20	2593.20	2594.40	2594.54	2597.58	2581.14

Time of FTSE 100 Day's high: 4:30 PM Day's low: 8:41 AM. FTSE 100 1997 High: 5612.8 (03/02/98) Low: 4056.6 (10/01/97)
Time of FTSE All-Share Day's high: 4:30 PM Day's low: 8:41 AM. FTSE All-Share 1997 High: 2597.60 (03/02/98) Low: 1989.79 (02/01/97)
Further information is available on http://www.ftse.com.

 "FT-SE" and "Footsie" are trade marks of the London Stock Exchange and The Financial Times and are used by FTSE International under licence. † Sector P/E ratios greater than 80 are not shown. ‡ Values are negative. Annual review changes please see FTSE Int website ftse.com. For Quarterly Review Changes see website www.ftse.com. Deletion: Baronsmead Inv Trust (FTSE Fledgling).

FTSE INTERNATIONAL

TRADING VOLUME

■ Major Stocks yesterday.

	Vol. 000s	Closing price	Day's change
[illegible]	[illegible]	[illegible]	[illegible]

Based on trading volume for a selection of major securities yesterday until 4.30pm. † Indicates a FTSE 100 index constituent. Trading volume... [illegible]

Highs & Lows shown on a 52 week basis

WORLD STOCK MARKETS

EUROPE

AUSTRIA (Feb 3 / Sch)

BELGIUM/LUXEMBOURG (Feb 3 / Frs.)

CZECH REP (Feb 3 / Koruna)

DENMARK (Feb 3 / Kr)

FINLAND (Feb 3 / Mkk)

FRANCE (Feb 3 / Frs.)

GERMANY (Feb 3 / Dm.)

GREECE (Feb 3 / Drachma)

ITALY (Feb 3 / Lira)

NETHERLANDS (Feb 3 / Fls.)

NORWAY (Feb 3 / Kroner)

POLAND (Feb 3 / Zloty)

PORTUGAL (Feb 3 / Escudo)

SPAIN (Feb 3 / Pts.)

SWEDEN (Feb 3 / Kronor)

SWITZERLAND (Feb 3 / Frs.)

TURKEY (Feb 3 / Tk Lira)

PACIFIC

JAPAN (Feb 3 / Yen)

AUSTRALIA (Feb 3 / AustS)

HONG KONG (Feb 3 / H.K.$)

INDONESIA (Feb 3 / Rupiah)

MALAYSIA (Feb 3 / MYR)

NEW ZEALAND (Feb 3 / NZ $)

SINGAPORE (Feb 3 / S$)

SOUTH KOREA (Feb 3 / Won)

TAIWAN (Feb 3 / TW $)

THAILAND (Feb 3 / Baht)

AFRICA

SOUTH AFRICA (Feb 3 / Rand)

NORTH AMERICA

CANADA

TORONTO (Feb 3 / Can $)

MONTREAL (Feb 3 / Can $)

FT/S&P ACTUARIES WORLD INDICES

The FT/S&P Actuaries World Indices are owned by FTSE International Limited, Goldman, Sachs & Co. and Standard & Poor's. The Indices are compiled by FTSE International and Standard & Poor's in conjunction with the Faculty of Actuaries and the Institute of Actuaries. NatWest Securities Ltd. was a co-founder of the Indices.

NATIONAL AND REGIONAL MARKETS Figures in parentheses show number of lines of stock	MONDAY FEBRUARY 2 1998 US Dollar Index	Day's Change %	Pound Sterling Index	Yen Index	DM Index	Local Currency Index	Local % chg on day	Gross Div. Yield	FRIDAY JANUARY 30 1998 US Dollar Index	Pound Sterling Index	Yen Index	DM Index	Local Currency Index	DOLLAR INDEX 52 week High	52 week Low	Year ago (approx)
Australia (73)	214.03	0.9	193.92	171.50	202.77	207.68	0.9	3.68	212.11	192.33	170.01	201.57	205.84	243.87	190.26	212.98
Austria (23)	197.54	0.9	178.97	158.28	187.15	187.02	0.6	1.77	195.81	177.55	156.95	186.09	185.97	213.59	175.14	183.05
Belgium (26)	269.54	1.4	244.21	215.97	255.36	250.00	1.1	2.76	265.94	241.14	213.15	252.74	247.25	269.54	227.73	232.04
Brazil (30)	225.68	2.0	204.47	180.83	213.81	466.54	2.0	1.60	221.20	200.57	177.30	210.22	457.29	322.44	184.94	212.37
Canada (121)	211.97	1.6	192.05	169.84	200.82	223.04	1.0	1.79	208.55	189.10	167.16	198.19	220.75	233.66	178.27	199.27
Denmark (34)	464.68	2.1	421.00	372.33	440.23	438.89	1.8	1.17	455.22	412.77	364.87	432.62	431.30	466.33	348.27	359.91
Finland (28)	304.55	1.2	275.93	244.03	288.53	352.65	0.8	1.78	301.02	272.95	241.27	285.08	349.69	349.43	243.25	260.97
France (81)	248.39	0.9	225.04	199.02	235.32	237.92	0.6	2.26	246.26	223.31	197.40	234.05	236.50	248.39	209.81	218.06
Germany (58)	240.79	2.0	218.16	192.94	228.12	228.12	1.7	1.33	235.03	214.02	189.18	224.31	224.31	243.87	188.34	189.34
Hong Kong, China (66)	343.77	15.1	311.46	275.45	325.69	341.50	15.1	4.67	298.77	270.91	239.47	283.93	296.83	580.03	262.93	491.48
Indonesia (27)	56.30	22.4	51.01	45.11	53.34	347.99	17.4	1.93	46.00	41.71	36.87	43.72	296.33	254.90	27.67	248.04
Ireland (16)	434.73	3.0	393.87	348.33	411.86	444.78	2.5	2.23	421.98	382.63	338.22	401.03	434.11	434.73	321.33	327.22
Italy (53)	130.73	0.9	118.44	104.75	123.85	175.59	0.6	1.40	129.60	117.51	103.88	123.17	174.53	130.73	83.01	93.94
Japan (481)	104.14	-0.3	94.35	83.44	98.66	83.44	-0.4	0.85	104.48	94.74	83.75	99.30	83.75	141.12	88.52	114.67
Malaysia (107)	149.97	1.6	135.87	120.17	142.08	237.70	0.0	3.05	147.61	133.85	118.31	140.28	237.70	660.85	113.58	624.54
Mexico (29)	1570.42	2.4	1422.81	1258.32	1487.79	14493.30	2.2	1.55	1533.53	1390.53	1229.15	1457.40	14184.76	1901.98	1324.80	1326.53
Netherlands (19)	417.07	0.8	377.86	334.18	395.12	390.95	0.5	2.15	413.64	375.07	331.54	393.10	388.89	440.67	328.42	330.34
New Zealand (14)	75.46	0.9	68.37	60.45	71.49	87.79	-0.2	4.56	74.81	67.84	59.97	71.10	87.91	96.47	71.49	91.41
Norway (38)	302.34	2.0	273.92	242.25	286.43	309.50	1.5	1.95	296.43	268.78	237.59	281.71	304.90	374.64	281.62	317.24
Philippines (22)	91.51	17.1	82.91	73.32	86.70	187.43	12.8	1.03	78.15	70.86	62.64	74.27	166.11	214.07	57.54	211.50
Singapore (42)	212.76	20.1	192.76	170.48	201.57	187.51	19.6	1.91	177.09	160.57	141.94	168.29	140.12	448.01	144.01	436.54
South Africa (43)	283.18	1.9	256.54	226.89	268.26	305.15	1.8	2.75	277.75	251.85	222.83	263.96	299.72	370.12	227.68	325.54
Spain (33)	298.94	2.1	270.84	239.53	283.21	349.87	1.8	2.00	292.72	265.43	234.62	278.19	343.72	298.94	206.12	215.99
Sweden (49)	485.66	2.0	440.01	389.14	460.10	580.53	1.6	1.79	475.90	431.52	381.44	452.27	571.22	538.84	405.00	427.54
Switzerland (31)	358.60	1.5	324.89	287.33	339.73	326.25	1.6	1.02	353.16	320.23	283.07	335.63	323.08	358.60	245.17	245.17
Thailand (39)	31.94	16.5	28.94	25.60	30.26	63.17	12.5	4.67	27.42	24.86	21.98	26.06	56.13	88.58	13.10	86.58
United Kingdom (213)	356.17	2.5	322.70	285.39	337.44	322.70	2.4	3.06	347.65	315.23	278.65	330.38	315.23	356.17	271.72	274.68
USA (638)	408.42	2.1	370.03	327.26	386.94	408.42	2.1	1.53	399.82	362.53	320.48	379.97	399.82	408.42	299.79	320.15
Americas (818)	369.69	2.1	334.94	296.22	350.24	312.38	2.1	1.55	361.96	328.22	290.13	344.00	305.94	369.69	274.59	293.00
Europe (702)	308.26	1.6	277.47	245.40	290.15	293.50	1.6	2.20	300.76	272.73	241.08	285.85	288.76	308.26	237.94	239.32
Nordic (149)	426.68	1.9	386.57	341.88	404.23	443.64	1.5	1.70	418.66	379.62	335.56	397.87	437.00	464.99	355.77	373.02
Pacific Basin (871)	113.46	1.4	102.79	90.91	107.49	92.38	1.3	1.59	111.89	101.45	89.68	106.33	91.19	158.99	95.32	135.64
Euro-Pacific (1573)	193.88	1.7	175.65	155.35	183.68	188.02	1.5	1.99	190.68	172.90	152.83	181.21	185.51	209.12	172.03	178.94
North America (759)	395.79	2.1	358.59	317.13	374.97	395.91	2.1	1.54	387.63	351.39	310.61	368.29	387.75	395.79	292.34	312.87
Europe Ex. UK (489)	272.98	1.5	247.32	218.73	258.62	270.35	1.2	1.70	269.06	243.97	215.65	255.70	267.12	272.98	213.38	214.98
Pacific Ex. Japan (390)	200.52	8.2	181.67	160.67	189.97	200.44	7.8	3.90	185.33	168.05	148.55	176.13	185.69	318.98	161.31	312.03
World Ex. US (1796)	196.90	-1.7	178.39	157.77	186.54	174.35	1.5	1.98	193.63	175.57	155.19	184.01	171.75	212.89	175.30	182.35
World Ex. UK (2221)	256.40	1.9	232.30	205.44	242.91	233.81	1.8	1.80	251.72	228.24	201.76	239.22	228.74	262.89	211.16	221.65
World Ex. Japan (1953)	345.38	2.2	312.92	276.74	327.21	340.95	2.1	1.87	337.90	306.30	270.75	321.03	333.78	345.38	271.90	283.19
The World Index (2434)	264.83	1.9	239.94	212.20	250.90	241.78	1.8	1.76	259.83	235.60	208.26	246.96	237.42	268.47	216.61	226.20

 PLEASE NOTE: Quarterly changes amendments: Previously announced industry classification changes for the USA (effective 2/2/98) have been re-scheduled to 3/2/98. CONSTITUENT CHANGE 2/2/98: Name change: NextLevel Systems to General Instrument Corp (USA). Latest prices were unavailable for this edition. Market closed 2/2/98: Malaysia.

Emerging markets: IFC Investable indices

Feb 2

NEW YORK STOCK EXCHANGE PRICES

4 pm close February 3

1997/98 High	Low	Stock	Div	Yld. %	P/E	Sls 100s	High	Low	Close Quote	Ch'ge Prev. Close
- A -										
[illegible]										
- B -										
[illegible]										
- C -										
[illegible]										
- D -										
[illegible]										
- E -										
[illegible]										
- F -										
[illegible]										
- G -										
[illegible]										
- H -										
[illegible]										
- I -										
[illegible]										
- J -										
[illegible]										
- K -										
[illegible]										
- L -										
[illegible]										
- M -										
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- N -										
[illegible]										
- O -										
[illegible]										
- P - Q -										
[illegible]										
- R -										
[illegible]										
- S -										
[illegible]										
- T -										
[illegible]										
- U -										
[illegible]										
- V -										
[illegible]										
- W -										
[illegible]										
- X - Y - Z -										
[illegible]										

Price data supplied by Extel, part of FT Information.

Yearly highs and lows for NYSE reflect the period from Jan 1 1997. Unless otherwise noted, rates of dividend are annual disbursements based on the latest declaration. Sales figures are unofficial.

d-new yearly low. P/E price-earnings ratio. ss-sales. u-new yearly high. x-ex-dividend or ex-rights. yld-yield. z-sales in full.
§ Dealings suspended.

GLOBAL EQUITY MARKETS

US INDICES

Dow Jones	Feb 2	Jan 30	Jan 29	1997/98 High	1997/98 Low	Since compilation High	Since compilation Low
Industrials	8107.78	7906.50	7973.02	8259.31 (6/8/97)	6391.69 (11/4/97)	8259.31 (6/8/97)	41.22 (8/7/32)
Home Bonds	104.97	105.18	104.99	105.48 (15/1/98)	101.09 (14/4/97)	105.48 (15/1/98)	54.99 (1/10/81)
Transport	3381.73	3309.07	3340.22	3386.62 (20/1/98)	2222.07 (2/1/97)	3386.62 (20/1/98)	13.23 (8/7/32)
Utilities	264.35	263.29	263.90	272.81 (30/12/97)	209.47 (25/4/97)	272.81 (30/12/97)	16.53 (8/7/32)

DJ Ind. Day's high 8157.88 (8023.89) Low 7987.46 (7850.95) (Theoretical◆)
Day's high 8122.23 (7985.97) Low 7909.59 (7898.09) (Actual◆)

Standard and Poors	Feb 2	Jan 30	Jan 29	1997/98 High	1997/98 Low	Since compilation High	Since compilation Low
Composite‡	1001.27	980.28	985.49	1001.30 (2/2/98)	737.01 (2/1/97)	1001.30 (2/2/98)	4.40 (1/6/32)
Industrials♥	1169.66	1145.72	1151.85	1169.82 (2/2/98)	865.42 (11/4/97)	1169.82 (2/2/98)	3.52 (30/6/32)
Financial♥	118.34	115.24	115.79	120.83 (8/12/97)	80.75 (2/1/97)	120.83 (8/12/97)	7.13 (4/8/74)
Others							
NYSE Comp.	520.72	510.63	513.19	520.72 (2/2/98)	389.47 (11/4/97)	520.72 (2/2/98)	4.64 (25/4/42)
Amex Comp	671.30	668.42	668.85	721.98 (7/10/97)	541.20 (28/4/97)	721.98 (7/10/97)	524.20 (16/7/96)
NASDAQ Cmp	1652.89	1619.36	1619.49	1745.85 (9/10/97)	1201.00 (2/4/97)	1745.85 (9/10/97)	54.87 (3/10/74)
Russell 2000	434.42	430.05	431.99	465.21 (13/10/97)	335.85 (25/4/97)	465.21 (13/10/97)	123.36 (7/12/93)

■ RATIOS

	Jan 30	Jan 23	Jan 16	Year ago
Dow Jones Ind. Div. Yield	1.74	1.79	1.77	1.96
	Jan 28	Jan 21	Jan 14	Year ago
S & P Ind. Div. yield	1.47	1.47	1.50	1.78
S & P Ind. P/E ratio	26.53	26.31	25.88	23.98

US DATA

■ MARKET ACTIVITY

● Volume (million)

	Feb 2	Jan 30	Jan 29
NYSE	731.200	613.380	754.460
Amex	28.648	28.453	30.544
NASDAQ	815.424	736.434	630.845

NYSE	Feb 2	Jan 30	Jan 29
Issues Traded	3,457	3,439	3,454
Rises	2,058	1,450	1,855
Falls	949	1,466	1,065
Unchanged	450	523	534
New Highs	203	123	163
New Lows	28	22	32

■ NYSE TRADING ACTIVITY — Volume : 731,200,000

■ ACTIVE STOCKS

Monday	Stocks traded	Close price	Day's change
Compaq	11,443,400	30¾	+⅛
Natl Semicnd	8,375,100	23½	-4⅝
Smthkl ADR	8,300,100	67½	+4⅛
Am. Hme. Prod	7,588,900	91⅞	-3⅜
Gen Elect	5,565,000	78⅜	+1⅛
Ph Morris	4,699,900	42⅞	+1⅛
Glaxo Wel	4,506,100	62⅞	+8⅝
Monsanto	4,270,100	50⅝	+2⅞
Schlmbrgr	4,223,500	73¾	-¾
Eli Lilly	4,158,500	69⅝	+1⅝

■ BIGGEST MOVERS

Monday	Close price	Day's change	Day's chge %
Ups			
Harvey Cas	27	+4⅜	+19
Pac Scient	29⅝	+4⅝	+18.9
Tom Hillngr	51¼	+7⅞	+17.7
Glaxo Wel	62⅞	+8⅝	+16.5
Downs			
RPC	11	-2⅜	-17.8
Natl Semicnd	23½	-4⅝	-16.4
Furon	18⅝	-2⅞	-13.2
Hillyard Prk	13½	-1⅞	-12.2

■ NASDAQ TRADING ACTIVITY — Volume : 815,424,000

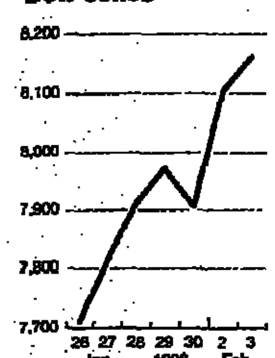
■ ACTIVE STOCKS

Monday	Stocks traded	Close price	Day's change
Oracle Corp	16,756,300	24⅝	+1⅛
Intel Corp	15,584,500	83⅛	+2⅛
Cisco Sys	13,899,100	63⅞	+⅞
Microsoft	12,258,800	154⅞	+5⅞
Worldcom	11,912,800	35⅝	-⅛
Dell Comptr	11,828,100	104⅞	+5⅛
Appld Matl	11,233,700	34⅞	+1⅜
Oxford Hlth	8,982,300	17⅝	+¼
Amgen	7,887,300	54	+4
Quantum Cp	7,559,700	26⅛	+1⅛

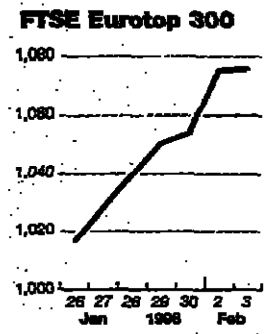
■ BIGGEST MOVERS

Monday	Close price	Day's change	Day's chge %
Ups			
Novel Denim	24⅝	+4⅝	+23.1
Verisign	31	+5½	+21.6
BGS System	43⅝	+7⅛	+19.5
State Fin Sav	35⅛	+5⅛	+17.1
Downs			
Scient Tech	13½	-2	-12.9
Farmer Bros	183	-23½	-12.8
Actrade Intl	19⅝	-2⅜	-10.7
MNB Bancsh	26	-3	-10.3

Dow Jones



FTSE Eurotop 300



JAPAN

	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Since compilation High	Since compilation Low
Nikkei 225	17022.98	16776.82	16628.47	20681.1	14664.4	38915.9	85.25

Day's high: 17144.08. Day's low: 16303.50

■ TOKYO TRADING ACTIVITY — Volume : 454,000,000

■ ACTIVE STOCKS

Tuesday	Stocks traded	Close price	Day's change
Yamaichi Scs	22,181,000	2	-1
Nip Steel	12,342,000	207	+11
Fujikura	10,039,000	975	+32
Sakura Bk	9,734,000	475	+17
Aoki Corp	8,370,000	94	+6
Fujita	7,930,000	123	+2
NKK	7,882,000	144	+7
LTCB	6,109,000	280	+10
Fuji Bank	5,291,000	800	+33
Toshiba	5,019,000	617	+20

■ BIGGEST MOVERS

Tuesday	Close price	Day's change	Day's chge %
Ups			
Kaneo Ltd	330	+65	+24.5
Daiken	460	+80	+21.1
Komatsu Zen	392	+60	+18.1
Toyama Chem	396	+60	+17.9
Downs			
Daidoh Ltd	386	-40	-9.4
Toshoku Viva	273	-27	-9
Sagami Co	350	-33	-8.6
Meiwa Corp	541	-49	-8.3

FRANCE

	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Since compilation High	Since compilation Low
CAC 40	3188.43	3187.60	3172.14	3188.43	2256.97	3188.43	984.61

Day's high: 3190.06. Day's low: 3163.35

■ PARIS TRADING ACTIVITY — Volume : 511,365,340

■ ACTIVE STOCKS

Tuesday	Stocks traded	Close price	Day's change
Rhne-Ponc	3,619,196	270	-12
Fr.Telecom	1,764,930	260.6	+6.2
Ass Gn France	1,752,826	318.5	-3.4
Usinor	1,465,129	88.1	+2.85
Euro Disney	1,279,027	9.05	+0.5
Schneider	1,051,997	343.3	-10.3
Axa-UAP	1,005,929	519	+5
Renault	908,627	195	-6
Suez Lyonn	732,753	783	+40
BNP	707,155	320	-4

■ BIGGEST MOVERS

Tuesday	Close price	Day's change	Day's chge %
Ups			
Aurea	62	+10.95	+21.4
Baccarat	560	+58	+11.8
Guerel-Etne	220	+22	+11.1
Gd Bazar	210	+20	+10.5
Downs			
AD Capital	122	-37	-23.1
Duc Lamothe	300	-70	-18.9
Sediver	146.1	-21.9	-14.1
Electronique	422	-47	-10

GERMANY

	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Since compilation High	Since compilation Low
DAX	4532.52	4522.81	4440.33	4532.52	2848.77	4532.52	531.18

Day's high: 4532.52. Day's low: 4489.43.

■ FRANKFURT TRADING ACTIVITY — Volume : 18,325,406

■ ACTIVE STOCKS

Tuesday	Stocks traded	Close price	Day's change
Bayer	1,315,982	74.58	+0.73
Commzbank	1,031,150	67	+2
Deut.Tlkm	945,714	33.25	+0.65
Hoechst	894,465	72.4	+2.4
BASF	870,882	64	+0.1
Deut Bank	830,223	118.5	+0.05
Siemens	783,446	113.65	+0.75
Dresdner bank	540,988	81.1	-0.8
Lufthansa	538,332	32.4	-0.6
Veba	488,022	128.35	+0.45

■ BIGGEST MOVERS

Tuesday	Close price	Day's change	Day's chge %
Ups			
Glunz	57	+4	+7.5
Walter	605	+35	+6.1
Fag Kugelfischer	24.8	+1.3	+5.5
Alcatel	280	+14	+5.3
Downs			
Puma	37.8	-3.15	-7.7
Strabag	121	-10	-7.6
Beta Systems	132	-7.5	-5.4
Douglas	62.15	-2.85	-4.4

UK

	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Since compilation High	Since compilation Low
FTSE 100	5612.8	5599.0	5458.5	5612.8	4056.6	5612.8	986.9

Day's high: 5612.8. Day's low: 5574.1

■ LONDON TRADING ACTIVITY — Volume : 885,600,000

■ ACTIVE STOCKS

Tuesday	Stocks traded	Close price	Day's change
BSkyB	27,527,780	361	+19
GUS	23,533,830	762	+29
BTR	21,310,520	169½	- ½
Smth.Bchm	19,019,900	830½	-14½
Villiers	16,733,560	7¼	
Brit Steel	13,832,840	133¼	+1½
BT	12,711,850	596½	+2
Glaxo Wlcm	12,683,290	1927	-56
Shell T&T	12,160,100	420	+4
Reuters	10,833,010	520	-28

■ BIGGEST MOVERS

Tuesday	Close price	Day's change	Day's chge %
Ups			
KS Biomedix	225	+67	+42.2
Argos	630	+135	+42.5
Pace Micro	40	+10	+33.3
Highland Dist	66	+15	+29.1
Downs			
UK Safety	5½	-1½	-21.4
Radamec	75½	-10½	-12.2
Honeysuckle	12½	-1½	-10.7
Silver Shld	2½	-¼	-10

INDEX FUTURES

■ S&P 500	Open	Latest	Change	High	Low	Est. vol.	Open int.
Mar	1003.80	1004.70	+0.70	1004.70	1001.40	101,391	388,843
Jun	-	1014.20	-	-	-	328	13,189
■ Nikkei 225	Open	Sett price	Change	High	Low	Est. vol.	Open int.
Mar	17200.0	17050.0	+210.0	17240.0	16970.0	21,735	188,341
Jun	17179.0	17000.0	+250.0	17170.0	16940.0	4,101	37,317

Open interest figures for previous day.

	Open	Sett Price	Change	High	Low	Est. vol.	Open int.
■ CAC-40 (200 x Index)							
Feb	3182.0	3187.0	-4.0	3207.0	3171.0	12,876	39,880
Mar	3193.0	3195.5	-4.0	3211.0	3187.5	371	24,322
■ DAX							
Mar	4536.0	4545.0	-10.0	4570.5	4518.0	20,974	75,133
Jun	4574.0	4574.5	-11.0	4600.0	4548.0	471	23,827

	Open	Sett Price	Change	High	Low	Est. vol.	Open int.
■ OMX							
Feb	2560.00	2548.00	-20.00	2565.75	2540.00	4,525	29,685
Mar	2555.00	2556.00	-23.50	2562.00	2555.00	500	2,554
■ SOFFEX							
Feb	6675.0	6714.4	+29.0	6747.0	6660.0	4,135	20,323
Mar	6680.0	6720.9	+32.0	6736.0	6665.0	47	849

WORLD MARKETS AT A GLANCE

Country	Index	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Yield	P/E
Argentina	General	21994.86	21878.91	21045.88	28771.70 22/10/97	18237.40 2/1/97	3	18.7
Australia	All Ordinaries	2654.4	2670.1	2658.7	2779.20 25/9/97	2299.20 28/10/97	3.36	19.7
	All Mining	852.6	845.4	841.2	987.10 24/2/97	581.10 27/11/97		

Switching from industrials to resources continued. News Corp slipped ahead of results tomorrow.

Country	Index	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Yield	P/E
Austria	Credit Aktien	478.82	473.17	478.92	478.92 30/1/98	374.40 9/1/97	1.91	13.8
Hungary	Bux	7605.01	7573.44	7421.65	8483.80 6/8/97	4291.30 6/1/97	na	na

Ended slightly firmer with evidence of highly selective buying coming from foreign investors.

Country	Index	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Yield	P/E
India	BSE Sens.	3354.86	3354.80	(c)	4548.02 5/8/97	3209.56 28/1/98		
	Crisil 500	611.81	613.55	(c)	843.28 5/8/97	584.38 29/1/98	na	na

Profit-taking sent shares lower for most of the day, before climbing towards the close on end of account buying.

Country	Index	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Yield	P/E
Indonesia	Jakarta Comp.	536.79	554.10	(c)	740.83 8/7/97	339.53 15/12/97	1.78	19.2
Poland	WIG	15344.5	14978.2	14601.5	18339.40 18/2/97	13228.80 12/1/98	0.84	14.8

Shares ended higher for the fifth consecutive session, but analysts said concerns about Russia were facing sentiment.

Country	Index	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Yield	P/E
Portugal	BVL 30	4469.24	4399.73	4312.67	4469.24 3/2/98	2165.57 2/1/97	1.01	41.4
	PSI 20	10437.05	10264.16	10057.53	10437.10 3/2/98	6152.34 2/1/97		

Ended at a fresh all-time high with power utility EDP and Portugal Telecom both posting significant gains.

Country	Index	Feb 3	Feb 2	Jan 30	1997/98 High	1997/98 Low	Yield	P/E
Russia	RTS		291.31	300.61	284.35	571.66 6/10/97	213.39 6/1/97	na	na

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NASDAQ NATIONAL MARKET

4 pm close February 3

[illegible]

NASDAQ NATIONAL MARKET

[illegible]

AMEX PRICES

4 pm close February 3

[illegible]

EASDAQ

[illegible]

* FINANCIAL TIMES

Wednesday February 4 1998

Shares catch breath after upward sprint

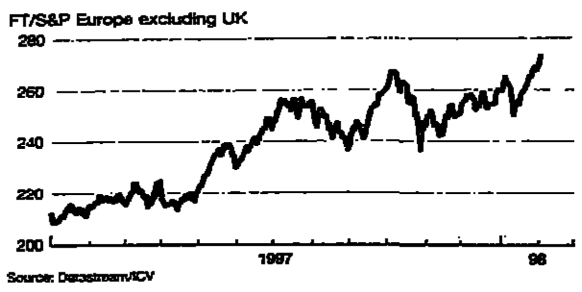
WORLD OVERVIEW

With the striking exception of Malaysia, world stock markets took a breather yesterday after their record-breaking run on Monday, *writes Philip Coggan.*

A swathe of European markets had recorded all-time highs on Monday, bolstered by a rally in Asia and by the knock-on effect of the proposed Glaxo Wellcome/SmithKline Beecham merger on pharmaceuticals stocks.

But the rally failed to sustain itself, even after the strong performance of Wall Street on Monday, where the Standard & Poor's 500 index passed 1,000 for the first time.

European equities



Source: Datastream/ICV

Nevertheless, shares in Dublin, Lisbon, Paris and Zurich had enough momentum to record further closing highs, while the Frankfurt market fell just short of Monday's peak.

Puma, the German sportswear group, became the latest company to cite the economic problems of Asia as one of the reasons for a profit warning. The trend is accelerating: Neil Cooper of NatWest Markets says that, on balance, earnings downgrades are now exceeding upgrades for European companies.

But he is still positive about the outlook for European stock markets, given that Asia's problems will lead to a fairly relaxed monetary policy across the Continent.

Ian Scott, European strategist at Lehman Brothers, says he is cautious on some of the main continental markets and expects returns to be modest this year.

"Valuations, particularly in Germany, are stretched relative to bonds. We expect to see the Bundesbank tighten monetary policy this year and the D-Mark strengthen against the dollar. And, unlike in some countries, liquidity is not that supportive: the cash levels of German mutual funds are low by historical standards."

Lehman's favourite market in Europe is the UK, while on the Continent, Scott likes Switzerland because of the stable growth of the companies that dominate its index.

Traders will be keeping an eye on the Federal Reserve and the Bundesbank this week, on the off chance that either central bank will defy expectations and raise interest rates.

The US non-farm payroll numbers on Friday will come after the Fed decision and so may not have as great a market impact as in the past. But Bob Craven of the Fixed Income Management Group in San Francisco thinks there is a risk the earnings component will breach the consensus forecast of 0.2 per cent month-on-month growth.

"After the 0.4 per cent and 0.6 per cent readings for October and November, December was up only 0.1 per cent. The market crowd is now complacent," he says.

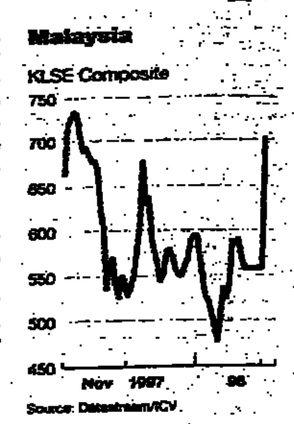
EMERGING MARKET FOCUS

Kuala Lumpur plays catch-up

Malaysian shares recorded their largest-ever one-day gain yesterday, soaring by 23 per cent as Kuala Lumpur returned from its week-long holiday determined to catch up after neighbouring markets rallied sharply at the start of the week.

Buoyed by reports of foreign money returning to the Asian region, local investors went on a buying spree, picking up the largest stocks in the hope of catching the rebound. A stronger ringgit also helped sentiment.

Malaysia



Source: Datastream/ICV

The composite index advanced 131.8 to 701.31, its highest closing level since November 7. Volumes were similarly impressive at 407m shares.

The picture was not uniformly rosy, however. This week's rally in Asian share prices has been driven, in the main, by evidence of US buying in markets that had hitherto seen little foreign interest. But in Kuala Lumpur, observers detected few signs of any significant foreign buying.

Ashok Shah, head of Far East equities at fund manager Old Mutual, argues that there are good reasons for this: "Things are still bad in other Asian countries, but at least we now have some idea of how bad things are going to get. This is not the case yet with Malaysia."

Malaysia's debt problems are unlike those of its neighbours in that they are primarily in local currency rather than dollar-denominated. However, there is still a massive domestic debt overhang – equivalent to nearly twice gross domestic product.

Mr Shah said around 10 per cent of this is linked to stock market activities and secured against the value of share portfolios. Around 35 per cent is invested in property.

In the past year, the stock market has fallen by 42 per cent in local currency terms, even after yesterday's rise, while real estate prices are crumbling. Business properties in Malaysia's main business centres, Kuala Lumpur and Johore, are reportedly selling at 40 per cent below last year's values.

Maybank, Malaysia's largest bank, gave some inkling of the pain such conditions are causing when it revealed a 29 per cent fall in profits for the six months to December. However, in yesterday's ebullient environment, the shares still gained M$2.70 to M$11.90.

Malaysia's ability to avoid the severe credit crunch experienced by its neighbours reflects the government's willingness to interfere in the markets rather than the economy's underlying health.

One tactic has been a deliberate policy of low interest rates. At around 10 per cent, these are way below the levels set by other countries in the region. Indeed, they are so low that Singaporean banks – traditionally players in the Malaysian money markets because of the higher yields – have now effectively withdrawn. Liquidity is drying up.

"When interest rates go up, as they have to, things will become very difficult for the local banks," said Mr Shah.

Jonathan Ford

Dow retreats but techs trade higher

AMERICAS

Wall Street was mixed at midsession as blue chips retreated but many technology shares continued higher, *writes John Labate in New York.*

By 12.30 the Dow Jones Industrial Average was 8.47 weaker at 8,099.31. The market's more cautious mood stood in sharp contrast to the heavy trading on Monday that sent the blue-chip index more than 200 points higher, with the Dow closing above 8,000 for the first time in 1998.

The Standard & Poor's 500 index also edged lower losing less than one point at 1,000.51.

While large company shares pulled back, smaller shares moved ahead and the Russell 2,000 index climbed 1.82 to 436.24.

Technology shares were particularly strong and the Nasdaq composite index rose another 9.06 to 1,661.95.

Although some stocks that were the subject of takeover talk on Monday pulled back, speculation about new alliances continued to run through the market.

In the financial sector shares of Hembrecht & Quist, long considered a takeover target, were up by $1 7/8 to $35 3/16.

Other news put the market under pressure. Shares of Oxford Health Plans were down more than 5 per cent or $1 to $16 3/4 on a report that doctors had filed suit against the health care provider for the late payment of fees.

GTech Holdings, the lottery operating company whose chairman was found by a UK court to have tried to bribe a rival, dropped another 5 per cent or $1 3/16 to $27 7/16.

In the technology sector, Microsoft rose $1 to $155 7/8 after a judge ruled in the company's favour in one part of its continuing anti-trust lawsuit.

In earnings news, Sprint shares climbed $7/16 to $62 7/16 in spite of announcing quarterly net income that fell below expectations.

Whirlpool rose $1 1/16 to $58 7/8 after the appliance maker reported higher revenues and earnings.

TORONTO was weak at midsession with the TSE-300 composite index falling 19.18 to 6,752.20 in volume of 44.4m shares.

Newbridge Networks tumbled C$8.25 to C$29.25 after the computer networking company took investors by surprise late on Monday with an estimate that third-quarter earnings would fall sharply.

The news brought a raft of downgrades from analysts who noted that earnings had proved disappointing in the previous two quarters of the year.

Biovail International jumped 90 cents to C$54 after the US Food and Drug Administration approved the use of its medication for the treatment of angina.

Mexico City edges up

MEXICO CITY reversed early profit-taking to rise in late morning trade as investors picked up bargains.

The IPC index rose 63.4 or 1.35 per cent to 4,736.49.

SANTIAGO slipped at midsession on selective profit-taking after two consecutive sessions of gains. The IPSA index fell 0.7 per cent to 91.68. Traders said the fall was to be expected after the strong rises on Monday and Friday. Strong trading interest continued in Enersis. The electricity holding group rose 0.8 per cent to 247 pesos.

SAO PAULO edged higher in early trade with the Bovespa index up 64 or 0.64 per cent at 10,037.

South Africa pulls back

The recent strong run in financial stocks prompted profit-taking in the sector in Johannesburg while a falling bullion price also left gold shares down 3 per cent.

The overall index lost 75.3 at 6,569.4, industrials slipped 64.7 to 7,716.9 and financials dipped 171.3 to 11,139.1. The gold index lost 26.2 at 860.6.

Gold Fields rose 50 cents to R33.50.

Profit-takers slow Zurich

EUROPE

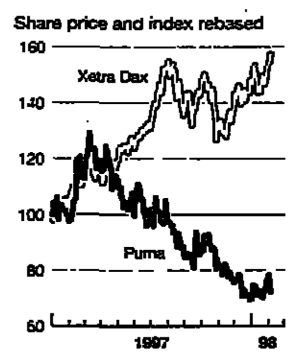
Shares in **ZURICH** extended their record-setting rally into a seventh straight session, but dealers said that the emergence of profit-taking suggested the pace of the advance was slowing. The SMI index finished 32.7 higher at 6,720.7, off a high of 6,744.3.

Pharmaceuticals remained at the centre of attention. Roche certificates rose SFr245 to SFr15,975 on rumours the company wanted to change its capital structure.

Novartis, which announced that its Exelon drug for the treatment of Alzheimers' disease had been recommended for approval by the European Medicines Evaluation Agency, rose SFr11 to SFr2,602.

UBS, which announced a higher dividend on 1997 results, fell SFr7 to SFr2,160 as its extraordinary shareholders meeting to approve the merger with SBC got off to a stormy start. SBC, whose shareholders meet today, was steady at SFr468.

Puma



Source: Datastream/ICV

PARIS saw investors taking a more selective look at the motor sector in the wake of sales figures on Monday that provided evidence of a growing recovery in the French market.

PSA Peugeot Citröen and Renault both posted gains when the figures came out. Yesterday, PSA extended its rise to more than 5 per cent over two days, gaining FFr21 to FFr846, while Renault slipped FFr8 to FFr195.

Analysts said there was evidence of investors switching out of Renault into PSA, encouraged by PSA's 27.5 per cent sales growth year on year in January.

Wall Street's weakness weighed on sentiment and the CAC 40 index only just scraped to a fourth consecutive record close after spending much of the day in negative territory. The index ended up 0.93 at 3,188.43.

FTSE Actuaries Share Indices — European series

February 3

National & Regional Markets	Ecu Index	Day's %	change points	Yield gross %	xd adj ytd	Total retn (Ecu)
FTSE Eurotop 300	1076.47	+0.08	+0.81	2.12	0.44	1085.25
FTSE Eurotop 100	2493.14	+0.17	+4.28	–	–	–
FTSE Eurotop 300 Regions						
300 UK	1103.45	+0.29	+3.18	2.96	0.63	1122.68
300 Ex-UK	1061.71	–0.05	–0.55	1.63	0.33	1064.74
300 Eurobloc	1038.88	–0.05	–0.54	1.85	0.50	1043.32
300 Ex-Eurobloc	1106.02	+0.16	+1.78	2.31	0.39	1118.07
FTSE Eurotop 300 Economic Groups						
Resources	939.38	+0.50	+4.64	2.95	0.50	952.98
General Industries	975.95	+0.30	+2.94	1.99	0.12	978.42
Consumer Goods	1122.88	–0.30	–3.42	1.64	0.13	1135.15
Services	1023.10	+0.21	+2.10	2.28	1.00	1032.08
Utilities	1155.98	+0.14	+1.57	2.51	1.84	1171.73
Financials	1167.89	+0.00	–0.04	2.04	0.14	1174.65

Base value 1000. More information on http://www.ftse.com. 'FTSE' and 'Footsie' are registered trade marks of the London Stock Exchange and The Financial Times. 'Eurotop' is a registered trade mark of the Amsterdam Stock Exchange. FTSE Eurotop indices are compiled by FTSE International. © FTSE International Limited 1998. All rights reserved.

Industrials were mixed. Electrical equipment maker Schneider weakened on a Merrill Lynch downgrade and scepticism about its management succession plans. The shares slipped FFr10.30 to FFr343.80.

Investment certificates in Crédit Lyonnais were a strong market, rising FFr24.60 to FFr316.40 following news reports that the bank would post profits of FFr2bn for 1997 after Asian provisions of FFr350m.

FRANKFURT was flat in late electronic trade, depressed by Wall Street's weak opening, and the Xetra Dax index edged 0.7 back from Monday's record high to close at 14,529.18.

Commerzbank, however, continued to move ahead climbing DM1.44 to DM67.35 in spite of provisional 1997 results that left many analysts unimpressed.

Puma, the sports equipment group, dropped DM3.50 to DM37.50 after the group admitted problems in Asia could have a larger impact on earnings than previously thought.

AMSTERDAM edged lower during a session marked by activity in companies reporting annual results. The AEX index finished 4.75 weaker at 960.46.

DSM, the chemicals group gave up Fl 2 to Fl 196.30 in spite of news that preliminary 1997 net profits had grown 20 per cent, at the upper end of estimates.

Analysts said the market had been disappointed the company had given no indication of the likely impact of Asia's troubles on its prospects for the current year.

KLM lost Fl 2.60 or 3.6 per cent to Fl 69.70 as third-quarter results came in sharply below expectations, and in spite of assurances that the airline was still on track to book record operating and net profits for the full year.

MILAN closed near the day's lows as banking stocks turned lower. The Mibtel index finished 152 lower at 19,003. Lack of fresh news about sector restructuring took the fizz out of banks. BCI lost L272 to L7,418, Credito Italiano gave up L204 to L6,517 and Banca Intesa fell L220 to L8,239.

However, there was still strong support for new issues. Assicurazioni Generali gained L1,353 to L51,107 as the bank prepared for a L4bn capital increase on February 9 to finance the purchase of Germany's AMB.

STOCKHOLM ended lower, hit by retreating drug stocks and heavy losses at airbag maker Autoliv. The general index fell 7.57 to 3,071.2.

Drug stocks fell back after posting strong gains on Monday, with market heavyweight Astra ending SKr3.50 lower at SKr153.50, while Pharmacia & Upjohn lost SKr16.50 to SKr307.

Autoliv tumbled SKr21 or nearly 8 per cent to SKr254 after the company's results revealed growth had mainly come from its seatbelt activities rather than in airbags.

OSLO ended marginally lower after poor results from telecoms equipment supplier Nera, which stirred worries about the impact of Asia's crisis on Norwegian blue chips. The Total index fell 1.17 to 1,250.42.

Nera's shares lost NKr7.20 or 19 per cent to NKr30.70 after profits fell 2 per cent against hopes of a rise.

The group's warning that lower Asian growth would affect demand for its products hit engineering group Kvaerner, which lost NKr7 to NKr308 on worries about prospects for its sizeable Asian activities.

MOSCOW fell 3 per cent as profit-takers moved to lock in recent gains. The RTS index closed 9.3 lower at 291.31.

Traders said the outlook for the market remained bearish due to ongoing investor concerns about the outlook for the rouble.

Written and edited by Michael Morgan, Jonathan Ford, Paul Gregan and Peter Hall.

Jakarta falls back after surge

ASIA PACIFIC

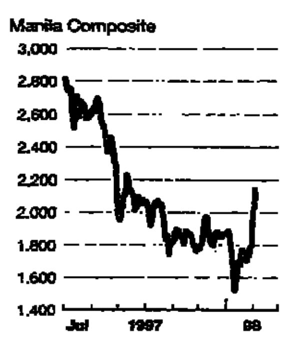
Waves of profit-taking pulled **JAKARTA** back after Monday's 14 per cent surge and the composite index closed 17.32 or 3.1 per cent lower at 536.79 in heavy turnover estimated at Rp773bn.

Consumer stocks were among the day's biggest losers. Gudang Garam, the tobacco group, lost Rp3,275 to Rp12,825 while Mayora, the confectionery company, fell Rp75 to Rp425.

MANILA lost 2.8 per cent as investors took profits after six straight sessions of gains during which the market advanced more than 22 per cent. The composite index finished 59.82 lower at 2,085.88.

Blue chips which had led the rally were among the day's biggest losers. PLDT lost 35 pesos to 1,075 pesos.

Philippines



Source: Datastream/ICV

TOKYO remained becalmed, in spite of the activity in the rest of Asia and on Wall Street, *writes Paul Abrahams.*

The market continued to be supported by hopes that a meaningful economic package will be unveiled on February 20, just before a G7 meeting, which might include measures to underpin the banks' capital base, and a revaluation of their land holdings.

The Nikkei 225 index rose just 246.16 or 1.5 per cent to 17,022.98 in low volume of 464m shares. At one stage the index reached 17,144.06, but analysts said selling at this level provided a cap.

At its low for the day, the index stood at 16,903.50. The Nikkei 300 gained 3.12 or 1.2 per cent to 254.36. The Topix index of all shares in the first section rose 17.31 or 1.4 per cent to 1,279.40.

The momentum was up, with 995 shares advancing, 203 down and 100 unchanged.

The steel sector, badly battered by the recession, was the day's best performer, up 3.9 per cent on hopes of increases in government spending on infrastructure.

Electric wire and cable manufacturers also benefitted from calls in the ruling Liberal Democratic party for increases in multimedia spending, and in particular the creation of a nationwide fibre-optic network. Fujikura rose Y32 to Y975.

DDI, the telecom service provider, which has lost more than 60 per cent of its value in the past six months, fell again Y18,000 or 4.5 per cent to Y380,000. Late last month the company announced a profits warning, blaming acute price competition.

In Osaka, the OSE index rose 288 points to 16,966

SEOUL closed below its best levels after profit-taking erased much of an early rise which followed news that Fitch IBCA, an international rating agency, had upgraded South Korea's long-term foreign currency rating. Reports that president-elect Kim Dae-jung would allow hostile mergers and acquisitions by foreigners added fuel to the early rally.

The composite stock index ended 6.53 better at 550.21, off an intraday high of 564.13 in heavy volume of 104.6m shares.

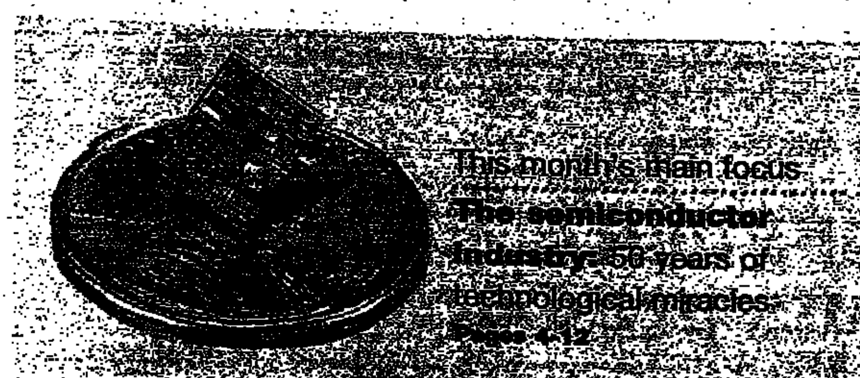
TAIPEI added to Monday's 4 per cent rise with another of 1.3 per cent, largely in response to Wall Street's overnight advance. The weighted index rose 109.07 to 8,514.18.

HONG KONG's blue chips ran into profit-taking, but China-backed red chips and H shares continued to power ahead. The Hang Seng index finished 53.09 lower at 10,525.51, up from a low of 10,387.88.

Red chips, however, surged 10.3 per cent higher while H shares were marked up 5.8 per cent.

Logic International, an office furniture distributor, said it was not aware of any reason for a 31.4 per cent rise in its shares to 28 cents.

SYDNEY was unsettled by worries over the coming half-year reporting season and the impact of the Asian crisis on earnings. The All-Ordinaries index fell 15.7 to 2,654.4.



FINANCIAL TIMES REVIEW

Managing information
Extranets: The future of business-to-business commerce
Pages 13-15

New directions
The Winter Olympics: IBM prepares for a snow trial
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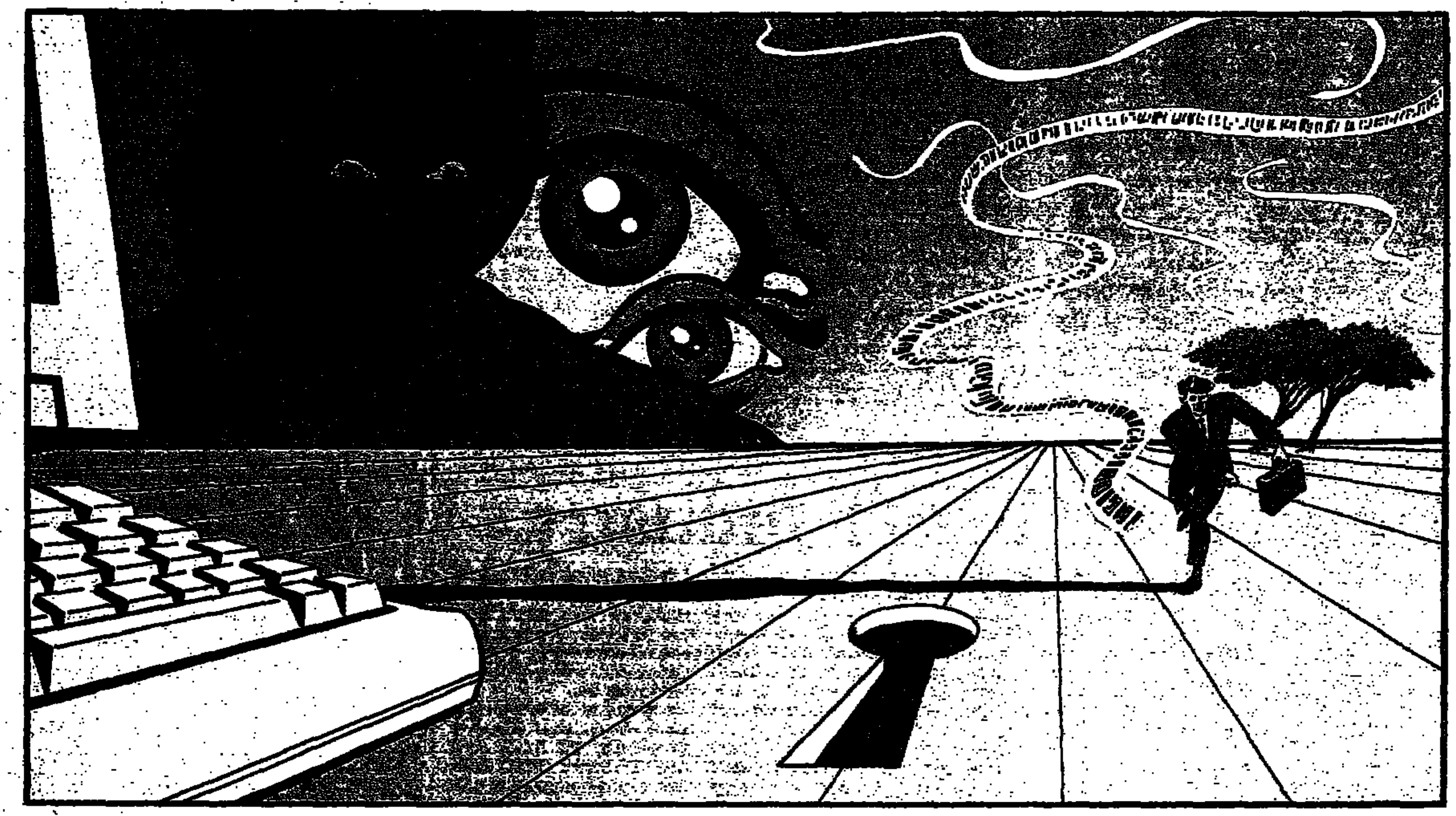
Information Technology

Wednesday **February 4** 1998

The vast amount of data on the information superhighway is causing concern about the 'Big Brother' age in which we live, reports **Paul Taylor**

Fears rise over personal privacy



Fifty years ago, Justice Louis Brandeis, a US Supreme Court judge, described privacy as, "the right to be left alone – the most comprehensive of rights, and the right most valued by a free people."

But in recent years, the rapid commercialisation of the Internet and the exploitation of other technologies such as 'data mining' have focused new attention on personal privacy and sparked an active debate on both sides of the Atlantic about the 'big *brother' age we are living in.*

Among the participants, Alan Greenspan, Federal Reserve Board chairman, expressed his concerns during a speech on privacy and electronic payment systems last year. Mr Greenspan noted the need for policies that "avoid the risk of a gradual, long-term erosion of privacy."

High profile cases such as the recent dismissal of a US Navy sailor after America Online turned over confidential information to a Navy investigator – a move which forced AOL to admit that it violated its own internal privacy policy and led a ruling from the courts last week that the Navy *must reinstate the man* – have catapulted the issue into the headlines.

The debate on privacy could have far-reaching consequences for both individuals and companies, involves the tangled moral and economic issues surrounding *the collection and transfer of* information gleaned from consumers by commercial organisations, governments and others.

This information can be collected from online sources, at a supermarket checkout counters, through loyalty card programmes and other sources. However, it is the implications of the Internet for privacy which has ignited most passion.

Indeed, some campaigners have grown so concerned about the sheer volume of data that is now collected about individuals over the internet – much of it available at a price to others – that they are now *calling* for new a tougher legislation to control the activities of modern-day marketers.

One bill now before the US congress – the Consumer Internet Privacy Protection Act of 1997 – would require written consent *before a computer service dis*closed a subscriber's personal information to a third party and would allow consumers to access and correct information.

Meanwhile, the Federal Trade Commission's decision to sidestep legislation and endorse, *instead, US industry guidelines* governing the operations of so-called 'look-up' computerised *databases* which disseminate personal information for a fee, has caused a storm of protest from organisations such as the Electronic Privacy Information Center (Epic), a *Washington-based* public pressure group.

Announcing the decision in December, Robert Pitofsky, FTC chairman, said "consumers have been justifiably concerned about the extent to which their personal information has become publicly available."

But he added: "The information industry's innovative and *far-reaching, self-regulatory pro*gramme will go a long way to address these concerns and lessen the risk that these services will be misused."

Epic, however, protests that the industry guidelines – which will restrict for example the disclosure of information such as Social Security numbers, mother's maiden name, birth date, credit history, financial history, medical records or similar information, "lacks enforcement and provides no legal rights for aggrieved parties."

Meanwhile, in Europe, member-states must implement the EU Data Protection directive by *October* 24 and several Asian countries, including Japan, are set to adopt the EU Directive's tough but cumbersome privacy standards.

The directive which seeks to harmonise privacy legislation in Europe lays down rules on issues such as database registration and rights of access. "We have been strong supporters of the directive," says Tom Robb, group *director of Equifax*, one of the industry leaders in the provision of customer credit checks. Equi*fax* holds 300m consumer credit profiles worldwide and processes 2,000 consumer names for lenders *every second.*

Once implemented, the EU *directive will strengthen existing* legislation in many European countries, including Britain. Among its provisions, companies with an international presence must ensure that personal information on the Internet is processes fairly and lawfully, collected and processes for specifies, explicit, legitimate purposes, is accurate and current and is not *kept any longer than necessary* to fulfil the stated purpose.

User's information privacy rights include a right to access, right of correction, erasure or blocking of information, the right to object to usage, right to oppose automated individual decisions and rights to judicial remedy and compensation.

But even ahead of implementation, Mr Robb acknowledges that many individuals are probably unaware of what data is currently held on them, or how to gain access to it.

There is, however, no doubt that concern about online privacy is growing. For example, a recent survey of the world wide *web conducted by the Graphic,* Visualisation & Usability Center revealed that privacy has now become the most important issue facing the Internet ahead of censorship and navigation.

The same study reveals that 72 per cent of 'Net users believe there should be new laws to protect privacy *on the internet* and that an overwhelming 82 per cent of users object to the sale of personal information.

It is the ability of website operators to track users' activities and match their findings with personal information gathered *from registration forms that is of* particular concern to many internet users. Last summer, Epic, which advocates government regulation of privacy standards, released a survey of 100 popular websites which found nearly half collected personal information from users.

Only eight gave users any control over how that information *could be disseminated, and 23 use* automated 'cookies' – small software programmes that plant information on a personal computer hard disk – to tag users so that they can be identified if they returned to the sites.

But while many users favour tougher legislation to protect online privacy, software developers and website operators are *generally opposed to laws or reg*ulations that might put a crimp in their activities. Instead, they favour self-regulation.

Microsoft and Netscape Communications, the leading providers of internet browser software, have both proposed technology solutions that would give web users greater control over the personal information they share *– the latest versions of both com*pany's software include a number of options for handling cookies.

Another layer of consumer protection may come from TRUSTe, a new industry group that aims to foster user-trust and confidence in the Internet, and create *a recognised seal of approval for* websites. Only sites committed to strict privacy guidelines would be entitled to use the seal.

Among its services, TRUSTe also publishes "tips for protecting your privacy online."

These include:

- *Look for the Truste logo.* Clicking on it will display the site's privacy policy.
- Be aware that when you provide your name and/or messages to others online, they will probably be able to find out how to communicate with you.
- Check whether the site has an 'opt-out' policy which allows you to prevent further solicita*tion or sharing of information* with third parties.
- If they don't already have one, ask your favourite sites to post easy-to-find statements of their privacy policy.
- Guard your password, change it often and never give it to anyone who asks for it online.
- Tell children never to give out their name or other personal *information without your permis*sion.
- Investigate software tools such as 'anonymisers' and 'cookie-cutters' that provide an addition lay of privacy protection. Consider encrypting e-mail.
- Report privacy violations and misuse of trust-marks to TRUSTe or the appropriate authorities.

Proponents of self-policing *approaches towards privacy* argue that they are good for business and for the internet. TRUSTe points to a study by the Boston Consulting Group which found that electronic commerce would grow twice as fast if consumers' fears about Internet privacy were erased.

One problem is that the bulk of revenues being generated by most websites come from advertising, rather than selling. While businesses offering goods and services to consumers over the Internet may want to adhere to privacy guidelines, their advertis*ers are equally determined to* gather as much information as possible about individual users.

Organisations such as Forrester Research, the US-based technology consultancy, argue that "a privacy time-bomb is ticking", and that leading companies "will need to adopt consensual marketing to survive."

In a survey of consumers about their privacy, Forrester notes that "a string of high-profile marketing debacles has thrust personal privacy into the spotlight."

The report adds: "The Internet gives marketers a unique and somewhat frightening power – the ability to collect data surreptitiously and impersonally, dis*tribute previously inaccessible* data worldwide, and link new data with old data."

The Forrester report reaches three main conclusions:

☐ First, it notes that people dislike telemarketeters and fear losing control of privacy. On-line, users hate junk e-mail, and steer away from data-gathering sites. They also worry about child *exploitation.*

☐ Second, new technologies will not solve the problem. By the end of the decade, *tools* such as filters, agents, profilers and anonymisers will be used by only 7m people, only 10 per cent of Internet users. "The masses will suffer repeated invasions of privacy until an acute event triggers an explosion," warn the analysts.

☐ Third, leaders will adopt consensual marketing to survive. "Intrusive 'in-your-face' methods will give way to *quid pro quo* deals that provide value to consumers who share information *with respectful marketers.*"

In much the same way that most loyalty schemes reward users with points or discounts in return for both their custom and – most importantly – the information which users knowingly supply when they apply and implicitly *provide* each time they use a loyalty card.

Predictably, however, not *everyone agrees. For example, Ms* Solveig Singleton, director of information studies at the Washington-based Cato Institute, argues strongly that "mandatory opt-in" schemes in particular would, "conflict with our tradition of free speech and do real economic harm."

Ms Singleton also warns that "privacy concerns should focus on government, not on private data . . . we have little to fear from private collection and transfer of consumer information," she says. "Our attention should shift to threats from government databases." And she argues passionately that regulating the collection of consumer information "would hurt small and new businesses."

The next FT-IT Review on February 25 will focus on enterprise computing: see details on page 7.

2

IT NEWS UPDATE

A legal case, intended to loosen Microsoft's grip on the market, is unresolved, reports **George Black**

Launch of Windows 98 is still on track

Microsoft is set to launch its new operating system Windows 98 including its Internet Explorer browser in the second quarter. It appears undaunted by the continuing legal action against it by the US Justice Department.

The case reached a partial settlement last month when Microsoft agreed to allow personal computer manufacturers the option of installing Windows 95 without the icon which is used to gain access to the browser and with some of the browser files removed.

This compromise ends the action for alleged contempt of court. But the Justice Department's main case that Microsoft violated a 1995 consent decree intended to loosen its grip on the market has still to be resolved. A district court has launched an inquiry into Microsoft's alleged violation of the decree which is due to be concluded in May.

That decree prohibited Microsoft from compelling PC manufacturers to licence "other products" with Windows 95, but permitted it to develop "integrated" software products.

Microsoft says it intends to go ahead with the launch of Windows 98 because the court case does not involve the new product. The company had earlier denied it was flouting a preliminary injunction by the district court to stop forcing personal computer manufacturers to instal its Internet Explorer browser with Windows 95.

It had told PC manufacturers that they could choose between a current version of Windows 95 with Internet Explorer removed and an older version of the operating system, which the government called "commercially worthless".

Microsoft still intends to appeal against the injunction. That appeal is scheduled for April.

Responding to the injunction, the company argued that Explorer was an integral part of Windows 95 and that to remove it would disable the system – though it conceded it would not be difficult to do. In a caustic reaction to the charge, Microsoft said the Justice Department's proposal showed that its "poorly informed lawyers have no vocation for software design."

The Justice Department contends that Microsoft's bundling terms are intended to stifle competition from rival browser developers such as Netscape.

Netscape was the leader in this field, which is generally seen as the key to dominating the Internet and thus the electronic commerce of the future. But it seems that Microsoft's greatly superior marketing strength is now crushing Netscape, which recently issued a profit warning. Its revenue growth has slumped from 50 per cent to 10 per cent and it faces losses of around $85m. Its shares fell heavily on the announcement and it is doubtful whether it can continue to compete without a strong business partner.

For Microsoft, the third largest company in the world by market capitalisation in the latest FT 500 listing, it is important that Netscape survives as a credible competitor. Its demise would strengthen the case supported by a growing number of companies that Microsoft operates an unfair monopoly. It could even provoke calls for splitting up Microsoft, as happened to AT&T.

The case has contributed to a sharp swing in public opinion against the company, compounded by the heavy-handed statements of its legal advisers and concurrent inquiries into its operations by several US states, the European Commission and the Japanese government.

Bill Gates, Microsoft chairman: the US Justice Department contends that the company's software 'bundling terms' are intended to stifle competition from rival browser developers such as Netscape

THE DIGITAL SALE

Compaq's $9.6bn deal puts pressure on IBM

The plan by Compaq Computer, the US personal computer market leader, to buy Digital Equipment for $9.6bn – a record-breaking acquisition which will put Compaq on a par with Fujitsu and Hewlett-Packard *in size – increases the pressure on IBM*, the world's largest computer company.

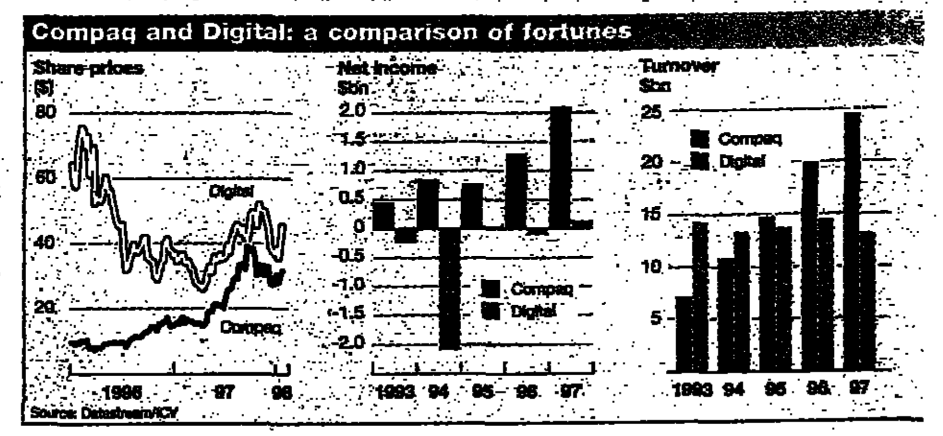
Combined Compaq/Digital income will be around $34.6bn, compared to IBM's $75.9bn, Fujitsu's $39.9bn and HP's $38.4bn.

Analysts said the price that Compaq was paying was very high, but the acquisition serves Compaq's purpose of aiming to become one of the top three in the industry. The deal is the biggest-ever in the global IT industry. It will help to strengthen Compaq's position in the corporate com*puting market, following its* purchase of Tandem, the fault-tolerant server manufacturer, last year. But rationalising these diverse businesses will test the management skills of the US personal computer maker to the full.

Perhaps the biggest winner from the takeover will be Microsoft, since Compaq, one of Microsoft's firmest allies, will now be able to promote Microsoft's software products to Digital's large minicomputer customer base worldwide. Digital, formerly a supporter of the Unix operating system, had swung in favour of Microsoft's Windows NT competitive product.

Digital's future as an independent company had begun to look doubtful since it agreed to hand over to Intel, its main competitor in the chip market, the production rights to its Alpha chip.

Compaq and Digital: a comparison of fortunes



ASIAN DOWNTURN

Turmoil for the IT industry

Investment in the west by Asian semiconductor producers is being cut back

The south-east Asian financial crisis is creating turmoil in the global information technology industry.

Sharp devaluation of Asian currencies and share prices is reducing the ability of Asian companies to import from western producers, but could make those *countries more attractive to* western investors.

At the same time, it will make Asian goods more competitive in western markets and reduce the cost of imported components. Growth prospects in south-east Asia for western IT producers have receded. IBM said its first quarter earnings would be below expectations, partly due to the Asian situation.

Oracle also warned its earnings would be down. Digital Equipment (being acquired by Compaq Computer in a record-breaking $9.6bn deal) said its Asian sales were down 16 per cent in dollars in the fourth quarter of last year.

Ericsson said its growth in the region slowed in the same quarter. Meanwhile, forecasts for Motorola's earnings have been reduced.

Slower growth in China could damage western exporters. However, the world's leading semiconductor manufacturer, Intel, reported that higher fourth quarter sales in China had offset a fall in Japan and South Korea.

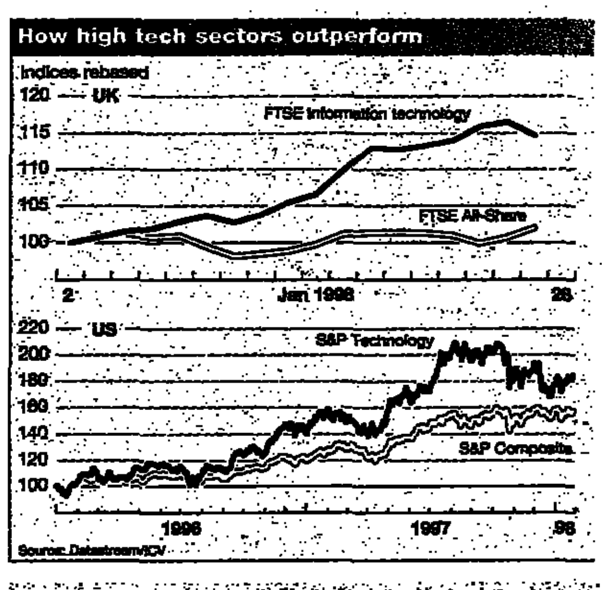
Western producers are being hit by falling prices of Asian competitors. Dell reacted with price cuts of up to 15 per cent. Seagate cited price cuts by Asian competitors as contributing to its reduced profits.

Cheaper South Korean *memory chips could cause a* collapse in global prices; Japanese chip makers have been cutting production because of falling prices.

Inward investment in the west by Asian producers is being cut back. South Korean conglomerates Samsung and LG are delaying developments and reducing spending worldwide.

Looking on the bright side, Mark Phelps, head of global investment for fund manager Dresdner RCM, says that a boost to sales in the west through lower prices could outweigh a slowdown in the still much smaller south-east Asian market. This is confirmed by Microsoft's results: though it said *the outlook was 'clouded' by* Asia, earnings rose because the fall-off in Asia was more than offset by stronger US sales.

How high tech sectors outperform



STOCKMARKET

Quandary over new IT index

The London Stock Exchange's decision to create a separate sector for information technology stocks has been fraught with problems. The idea was to draw fund managers' attention to undervalued UK stocks, especially in software and services, previously classed with many dissimilar businesses under "support services".

But by calling it an 'IT index' FTSE International, the joint Financial Times and Stock Exchange company, raised the question of whether hardware manufacturers and others should be included.

When prices of leading shares to be included in the index from next January, such as Sema, Misys, Sage, CMG and Logica, shot up – some of them by more than 15 per cent in just five weeks – several companies which had been omitted began to lobby for a re-assessment.

Some appear to have been left out purely because a part of their operations did not involve IT; these include recruitment agencies such as CRT and Lorien, the consultancy, Capita, and retail software developer, Riva. Others such as Psion, the handheld computer manufacturer, and Video Logic, the chip designer were apparently left out because although they were wholly involved in IT they were not in software or services.

The list of companies to be included in the index was chosen by FTSE International after strong lobbying by the UK Computing Services and Software Association. (CSSA). Industry analyst Richard Holway, who was one of the principal advocates of the re-categorisation, argued that the index was designed to include only software and services, not hardware manufacturers, which often had a much less stable performance.

Even without the hardware companies, the index could turn out to be erratic. The top five companies make up 64 per cent of the weighted index and their fortunes will therefore govern its movements. As Mr Holway notes, "if one of them, sneezes the index could catch pneumonia".

FTSE International says it is open to any company to apply for admission to the index and it will consider any submissions made by mid-February at its committee meeting on March 2. Only 27 companies are due to be included in the index.

Although FTSE International classifies 88 companies in the sector, many of these are regarded as too small by market capitalisation to justify a place in the index.

It is due to be launched at the beginning of next year provided the sector as a whole grows as expected to reach a collective market capitalisation equivalent to 1 per cent of the whole market.

If the index is successful and if companies think they will win a more favourable rating on it than in the past, one result could be that more British and part-British companies choose to float in London rather than on the competitive markets of Nasdaq and Easdaq.

IT diary dates

□ **February 10:** Securing your IT skills base for the year 2000 and beyond. London seminar; details from Unicom, tel: 01895-256484.

□ **February 17-19:** *Integrated Communications 98* and Smartcard 98, Olympia 2, London; exhibition and seminars; details on tel. 01895-454545.

□ **February 20:** Global Mobile Commerce Forum, Cannes, France; seminars; tel. IBC on 0171-453-2110.

□ **February 25-27:** Internet Service Provision 98, RAI Centre, Amsterdam, Netherlands; conference, exhibition and workshops; tel. First Conferences on 0171-404-7722.

□ **March 3:** IDC Directions '98, Boston, US; call IDC on 001-508-872-8200; also in San Francisco on March 19.

□ **March 19-25:** CeBit '98, *Hanover, Germany;* vast international trade fair; call Deutsche Messe on (49) 0511-890; or, in the UK on 0181 688 9541; CeBIT Home, the international trade fair for home and consumer electronics, will take place on August 26-30.

□ **March 24-26:** Internet Commerce Expo, World Trade Center, Boston, US; exhibition; call IDG on 001-508-820-8675.

NEWS IN BRIEF

Apple moves back into profit

Apple Computer has surprised the industry by returning to profit after more than a year of losses. The company earned $47m in the past quarter on revenue of $1.6bn. Cost-cutting and new models launched in November contributed to the recovery.

Analysts had expected losses to continue and some experts thought the company's downward slide had become irreversible. Apple's shares rose 20 per cent as a result ofthe news.

Steve Jobs, the co-founder of the once market-leading personal computer manufacturer, returned as interim chief executive last year to try to turn the company around.

Apple's misfortunes stem from its loss of technological leadership to Microsoft which took over the idea of windowing and popularised it worldwide. As a result, Apple *has steadily lost market-share.*

Mr Jobs announced last year that Microsoft would invest $150m in the company to ensure its survival. The news was greeted with horror by long-term Apple enthusiasts, but the market reacted with cautious optimism, which now looks as if it could have been justified.

Governments told to take action on year 2000 problem

The governments of the US, Canada and the UK have been told by a group of multinational companies, academics and trade union leaders that urgent action is needed to avert calamity arising from the year 2000 date problem. They say governments must intervene to ensure the continuity of public services.

In the US, the Securities and Exchange Commission has called on companies to inform their investors about plans to tackle the problem. A survey by the UK's Computing Services and Software Association among 1,000 UK organisations found that 77 per cent had not yet made arrangements for the people they will need to do the work.

The UK government's Action 2000 taskforce launched its Millenium Bug campaign by setting up a hotline (0845-601-2000) and a website (http://www.open.gov.uk/bug2000.htm).

Warning to company directors to take swift action: see guest column by Ian Taylor, MP, on page 15.

'No role' for the NC

Network computers may not find a role in corporate computing, according to a survey conducted by Benchmark Research for Compaq Computer. This was, of course, exactly what Compaq wanted to hear, although it is insisted that the survey was wholly impartial.

Three-quarters of the IT directors questioned foresaw that personal computers, the technology in which Compaq leads the world, will remain the mainstay of the corporate computer department and not be displaced by slimmer, cheaper models getting their data from servers across a network.

About half did not believe that NCs would reduce their operating costs significantly, as the supporters of the concept including Oracle and Sun Microsystems have argued. However, the respondents were looking only two years ahead and there are some signs that a few leading companies are already going in that direction.

IBM has recently signed a deal with the UK insurance company, General Accident, for 4,000 NCs, claimed as the largest such contract in Europe to date. Last year, Safeway, the supermarket chain, announced an intention to move to NCs as part of its long-term strategy.

Microsoft moves ahead in battle of the browsers

Microsoft appears to have won the "battle of the browsers", according to two European surveys conducted by Inteco, the Woking-based researcher.

The two surveys, conducted in April and October last year among 7,000 and 6,000 web users respectively in France, Germany and the UK, show a sharp swing in favour of Microsoft's Internet Explorer.

In April, Netscape Navigator users outnumbered those using Internet Explorer in France (54 per cent) and the UK (56 per cent) although in Germany, Internet Explorer edged Navigator out with a 51 per cent share.

By October, however, 60 per cent of users in France, 54 per cent in Germany and 58 per cent in the UK were using the Microsoft software.

Andersen Consulting fights to split

Andersen Consulting, the management and IT consultancy business, is continuing its struggle to split from the accountancy partnership, Arthur Andersen. The [illegible] practice has been seeking more time [illegible] spin-off the consultancy last year took the case to the International Chambers of Commerce [illegible] independence.

George Black, e-mail address gbg26@dial.pipex.com

مصور من الأصل

The FT Review of Information Technology

This review is published on the first Wednesday of the month. In addition, a weekly FT-IT news and feature page appears on each of the other Wednesdays of the month.
The IT Appointments page is published on Wednesdays.

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Picture research: Patricia Lee and Matthew Glynn

The next issue: Wednesday, Feb 24, extra issue on Enterprise Computing.
The March 4 issue will focus on: the business IT landscape, including business intelligence; workflow, imaging, document management and call centres.
Plus: IT news update and interviews with key figures in the IT industry.

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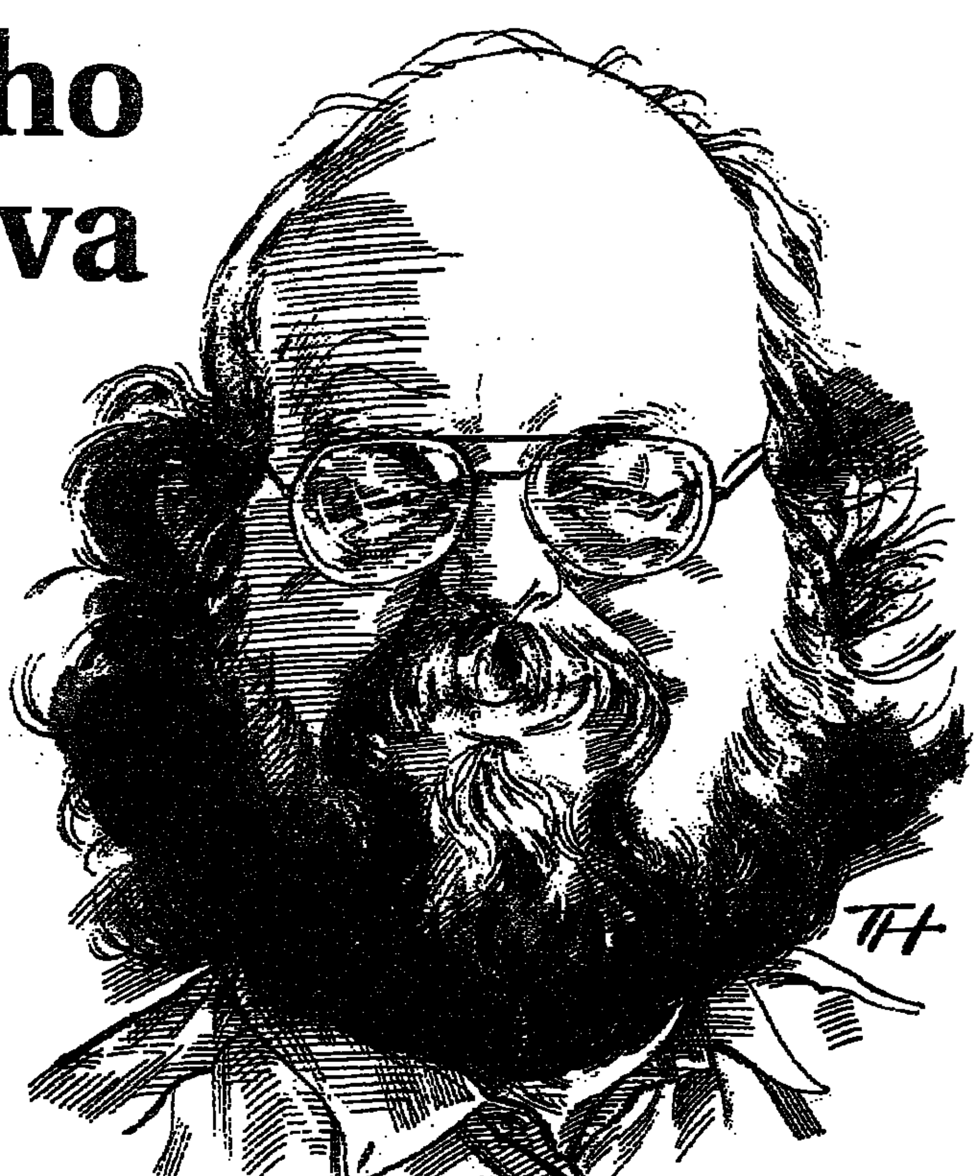
The man who invented Java

James Gosling has been described as one of the most brilliant software developers of the age. He is interviewed here by **Paul Taylor**



By his own admission, James Gosling, the Canadian-born creator of the Java programming language, was the quintessential high school nerd.

He was introduced to computers when he was 14 and by the time he was 15 he had begun to earn money, writing software. "I sort of stumbled into computers really and I have never really fallen out of love with them," he says, although he insists he has never really enjoyed playing games.

"My first paying job was for a bunch of physicists who needed software written for not very much money." The job was writing the software to run experiments on board an international satellite called Isis.

After graduating from the University of Calgary, he spent five-and-a-half years at Carnegie-Mellon in the US studying for his PhD degree. One of the first systems he became known for was a Unix text editor called Emax which is still in use today, 20 years later. "I got to a point in my grad school career where it was clear that I had a choice between graduating and dedicating my life to the care and feeding of Emax. I decided to graduate, instead."

After Carnegie-Mellon he was hired by International Business Machines where he worked on the PCRT project. Although Mr Gosling says IBM's laboratories had "absolutely stunning facilities" he soon became frustrated. "After a year and a half of watching what was essentially a really sick comedy show, I decided that I didn't understand the difference between technology and politics so I joined Sun Microsystems in 1983 and have been hanging around Sun ever since."

Long before Java, Mr Gosling says he had been thinking about alternative operating systems and alternative languages. "Languages are really interesting tools for general solutions to all kinds of very interesting problems, and a lot of the more interesting ones are those which are very specialised for particular situations.

"I think, in general, language as a concept is something that is under-appreciated. Most people speak and listen and don't really think much about the power involved in it. Languages in any form whether they are spoken languages, visual languages, musical languages or whatever are important."

However, his first project at Sun a windows system called NeWS was, he now acknowledges, "a complete disaster for Sun", and a second project fizzled out. "A group of us were getting kind of depressed about life, the universe and everything so we got together and started this project which became known as the 'Green project'," he recalls.

"The original charter was to go off and think about the next wave of computing." Pretty quickly, the team focused on the consumer electronics industry. "There were already microprocessors in doorknobs", he says, "but by-and-large the people that were building them weren't very smart about how you build hardware and software. As we talked to them it was like going back in time. But, on the other hand, there were a lot of things from that community that were really enlightened because they had spent a lot of time thinking about what it is like putting a device in somebody's home."

So the team began exploring how the computing and consumer electronics industries could learn from each other. "What we decided to do was to build a prototype remote control home network system for controlling TVs and VCRs. We cobbled together the world's heaviest remote control," he says, beaming.

"We coined a technique we called 'hammer technology' we would take something, hammer them apart, grab the bits and pieces out of them, then hammer them together." The remote control included a SparcStation chip, a screen from a Sharp television set, connectors from a Sony Walkman, speakers from a Nintendo GameBoy and radio networking from "a weird military modem".

Mr Gosling himself was involved mostly in the software. "We started building it using the standard software tools," he says, "but the tools we were using just weren't working. It was one of these places where languages came to the rescue. So I went off into a corner and I built this compiler and programming language that eventually turned into Java.

"Java was really shaped by this experience of building this hand-held 'remote'." The Sun researcher says the team's design objectives were "a kind of a laundry list which included things like being reliable." Gosling notes that when consumer electronics companies have to choose between backward compatibility and reliability "reliability always comes out on top, whereas the computer industry tradition is that compatibility is king.

"The really insidious thing about compatibility at this level is that it freezes you in to yesterday's technology," he says. Another big issue for software developers is what microprocessor or central processing unit to write for.

"In the computer business there were two, maybe three, CPUs that people were really targeting. You have to target a particular CPU and every CPU you target partitions the market."

However, what Gosling recognised is that all CPUs use machine language. "This defines a kind of coupling between applications and the CPU which is very detailed and it stops applications written for one machine running on another machine," he explains.

"This tight coupling causes the CPU technology to partition the market for software and that is one of the things that forces the dominance of any one CPU.

Continued on page 5

FT IT

Prospects for the world semiconductor industry

Here and on the following eight pages, FT writers examine developments in the semiconductor industry.

In this section:

THE SEMICONDUCTOR REVOLUTION • By Paul Taylor

An industry unique in history

To see a world in a grain of sand,
And a heaven in a wild flower:
Hold infinity in the palm of your
hand, and eternity in an hour
– William Blake

From cameras to cars and from computers to communications, the world today is powered by semiconductor chips made out of silicon – and companies such as Intel, NEC, Motorola, Texas Instruments and Toshiba, the five biggest chip-makers, are among the *most exciting and dynamic* on earth.

Virtually no part of modern life has been left untouched by the semiconductor revolution. Indeed, it is estimated that on an average day, a typical American interacts with more than 300 micro-controllers.

"Semiconductors have revolutionised the home, the office, industry, the transport network, medical science and more," notes the Global Semiconductor Market Report, published last month by *Electronic Times*. "Common everyday home appliances are becoming 'smart'. Semiconductors are invading every aspect of our lives."

And yet, notes the report, "with a plethora of technological projects still in the pipeline, this semiconductor revolution has only just begun."

Even in the industrialised markets of North America, Japan and western Europe, the majority of households does not own a PC, or possess a cellular telephone. "It is the combination of industrialised markets forging ahead in applying semiconductors to an ever-broadening portfolio of applications, with the developing markers promoting mainstream devices such as PCs and consumer applications, will lead *to one of the world's most* valuable individual markets in the twenty-first century."

As Dave Richardson of Texas Instruments noted in a Comdex keynote speech last year, "the absolute pervasion of electronic equipment in the world today is a fact: over the last ten years, growth in demand for electronic equipment has averaged nine per cent a year."

Not only are semiconductors being used in new applications, more semiconductors are being used in existing applications – the semiconductor content is rocketing. According to Dataquest, the market analysts, semiconductors will account for 30 per cent of electronic revenues by the end of the decade, up from 16 per cent in 1994.

"That growth is driven largely by the shift from analogue to digital," said Mr Richardson – *a primary* reason why TI has focused on the digital signal processing (DSP) market. The growth in both electronics and in chip content has made the industry unique and "unlike any other industry in history." In the first half of the 1990s, the world semiconductor market experienced rapid growth topping the $100bn mark for the first time in 1994. The driving force for this growth has been the 'information revolution' which has seen the convergence of a wide range of technologies and markets including computing, communications and consumer electronics.

Spectacular advances in semiconductor design, including shrinking sizes and tumbling prices on the one hand, and rapid gains in performance and power on the other, have helped enable manufacturers to build chips into many everyday items, accelerate time to market and increase product functionality.

"This has allowed manu*facturers to tap into an enor*mous potential market previously unavailable to them – the private consumer," notes the *Electronic Times* report. "This has resulted in economies of scale which in turn has made the products available to an even wider market. Ongoing developments also mean that state-of-the-art electronics become almost obsolete within three years, thereby constantly regenerating the market and sustaining high growth rates."

The world semiconductor market is expected to grow to $168bn this year – despite Asia's recent economic woes – and to around $330bn in 2002, even though the growth of personal computer sales in Japan probably will slow to five per cent this year – less than one-third of projected growth in the US, according to International Data Corporation, IDC.

Nevertheless, despite the steady growth in volumes, the value of the worldwide semiconductor market can be volatile. Last year, the semiconductor market was worth more than $140bn, a relatively modest increase over the previous year but a welcome advance set against the 9 per cent decline in 1996.

However, the sales figures mask a dramatic increase in unit shipments of D-Rams which soared 90 per cent in 1997 while prices fell by 75 per cent in 1996 and a further 65 per cent last year reflecting widespread overcapacity as a string of new fabs (chip fabrication plants) came on stream.

But a turnaround may be in store. In spite of the Asian crisis, most analysts expect D-Ram revenues in 1998 could rise 20 per cent, to around $25bn. That would be particularly welcome news to semiconductor manufacturers in Japan, South Korea, and Taiwan, which together account for 80 per cent of world D-Ram production.

Many of these D-Ram manufacturers have recently announced cutbacks in production, scaled down their investment plans or have even skipped a generation of D-Ram technology to focus on higher value 64Mb chips. For example, Siemens, which has spent £1.1bn on a new fab near Newcastle, has accelerated its switch from 16Mb to 64Mb chips.

Among the companies which have announced cutbacks, Hitachi, one of the top five Japanese semiconductor makers, said it would cut back production at eight of its facilities in Japan in an attempt to stem losses in its memory chip business.

"Their losses are so large that they need to do this, to cut their losses," said Yoshiharu Izui, industry analyst at UBS Securities in Tokyo, last month. He estimated Hitachi is losing Y2bn to Y3bn ($16m-$23m) a month in its semiconductor business.

Hitachi's move followed Mitsubishi Electric's announcement that it plans to close one of its facilities in the US, where it manufactures lower value-added 4-megabit D-Rams. Meanwhile, Fujitsu, another leading Japanese semiconductor maker and Japan's largest computer manufacturer, said it was considering scaling back its capital investment plans by about 30 per cent.

Toshiba has also postponed the construction of an advanced facility in southern Japan, which was expected to start this year. The original plan was for the new facility to start producing 256-megabit D-Rams in 2000. However, that plan had been delayed by at least two years, Toshiba said.

Meanwhile, NEC, is consolidating production of 16-megabit D-Rams at its US facility. The company will no longer produce 16-megabit D-Rams in either Japan or the UK, where the higher costs of its facilities requires high value-added products to maintain profitability. As a result, total D-Ram output will fall from about 11m a month to about 6m month by this autumn.

Other companies, including Motorola of the US, have decided to abandon the volatile market for D-Ram chips altogether. Motorola now plans to focus on customised, highly integrated circuits and tap its portfolio of 50,000 chips, including the PowerPC microprocessor, to compile a huge catalogue of modules and components or building complete 'systems-on-a-chip.'

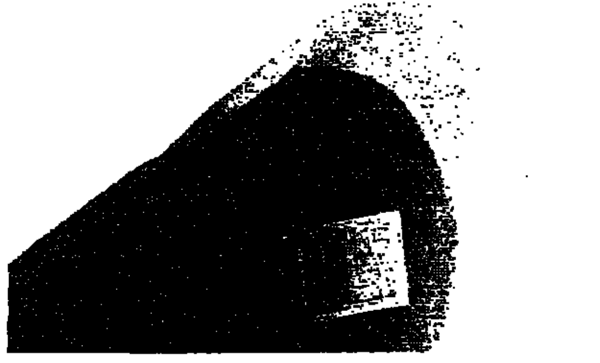
Tomorrow's silicon will merge dozens of today's single function semiconductors on a single silicon chip – only the most complex systems will need more than a couple of chips – and many products, such as GSM digital telephones, will have just one. This move towards integrating memory, logic, and other circuit types on to one silicon slice to create systems-on-a-chip represents a key industry trend as the 1990 draw to a close.

Aside from Motorola, SGS-Thomson Microlectronics, LSI Logic, National Semiconductor, VLSI Technologies and many other companies are already targeting this market. As a result, system-on-a-chip sales, which currently amount to only $4bn, or 3 per cent of the world market, are expected to total $70bn by 2001 – triple the size of today's microprocessor market – and 26 per cent of total chip sales. Other companies, including TI, are focusing on DSP chips to translate analogue signals into digital codes that computers can process and are widely used in devices such as modems. However, the problems in Asia could be painful for suppliers of semiconductor manufacturing equipment – a market worth $28bn last year. Asia accounts for just over half of global semiconductor capital expenditures, but just 18 per cent of worldwide spending on information technology – a figure that shrinks to 2 percent for the countries in serious trouble – Indonesia, Malaysia, the Philippines, and Thailand – are excluded.

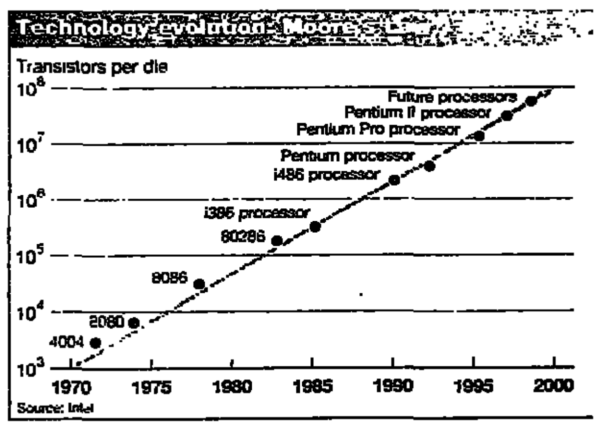
In any case, market analysts such as Elizabeth Schumann of the Semiconductor Equipment Materials International (Semi), believe any downturn will be short-lived since the industry is entering a period of technology transition including the move to larger 300m silicon wafers and 0.18 micron chip designs.

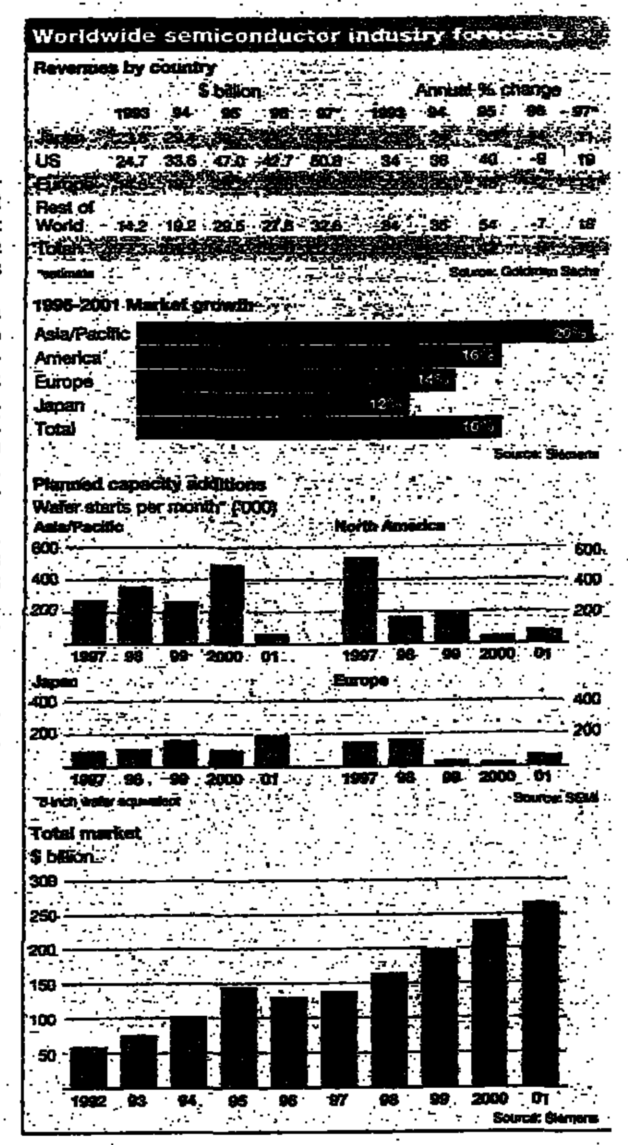
Both steps will increase chipmakers' output, but will involve hefty investment in new plant and equipment, including wafer-processing machinery.

**Electronic Times: Global Semiconductor market Report 1998-2002*



Small is beautiful: a Motorola smartcard chip





RISK FACTORS FOR PRODUCERS • By Geoffrey Nairn

A perilous business

Pricing levels, bugs in chips and fears of litigation are just a few of the worries

Making semiconductors has always been a risky business but investors reading the latest financial results from the leading vendors, are left in no doubt about just how perilous the chip business has become.

After reporting its eighth successive year of record revenues and earnings, Intel, the industry leader, closes its 1997 financial statement with a list of 16 risk factors that affect its business. Topping the list is "economic conditions in various geographic regions".

Motorola, another big chip vendor, is more specific. "During the fourth quarter, the deterioration of economic conditions in certain Asian markets had an impact in terms of slowing the growth of sales, orders and profits, as well as putting pressure on pricing," says Robert Growney, president and chief operating officer in the company's 1997 statement.

Asia may be the current trouble spot but it is not the only problem facing chipmakers. Intel's risk list includes changes in customers' inventory levels, seasonal PC buying patterns, pricing pressures, excess or *shortage of capacity*, bugs in processors and litigation over intellectual property rights (IPRs).

The risks are many and very real. A serious bug discovered in 1994 in its first generation of Pentium processors cost Intel $475m.

Last October, the chip giant settled a lawsuit brought by Digital, which had accused Intel of using technology from Digital's Alpha processor in its Pen*tium chips. Intel agreed to* buy Digital's chip operations for $700m to end the conflict. It has at least two other lawsuits awaiting settlement. Analysts say Intel has suffered from over-ordering by Asian PC makers and will have to cut prices on some processors to clear inventory.

Intel also admits that the cost of the new chip packaging used for its latest Pentium II processor will hit profits in the short-term. Despite these setbacks, Intel continues to set a formidable pace in the industry and its 1997 results were better than many analysts expected.

According to the research company, Dataquest, Intel increased its semiconductor revenues in 1997 by 19 per cent to $21bn. "Led by microprocessors, Intel grew its semiconductor revenue by nearly 20 per cent during the year, which is strong performance in face of major inventory adjustments by PC [makers]," says Ron Bohn, director for Dataquest's worldwide semiconductor research.

Intel's strength comes primarily from its dominance of the PC microprocessor market, where it has about a 90 per cent share. Its chip sales are more than double those of NEC, its nearest rival, and while many of its competitors had sluggish sales in 1997 and several experienced declines, Intel managed to grow almost four times faster than the market, which rose 5.5 per cent to $150bn, according *to Dataquest.*

The only other top ten firms to beat the market were Fujitsu and Texas Instruments (TI). The Japanese vendor successfully fought the effect of the weak yen with a 10.1 per cent growth in chip sales, when expressed in dollars, to $4.87bn. TI's chip sales *grew* 8.4 per cent to $7.66bn thanks largely to its strategy of focusing on digital signal processors (DSPs). These are used in products such as cellular phones and promise higher margins.

TI estimates that the DSP market is growing more than 40 per cent a year and could be worth $50bn in the next decade – *see report on DSPs, page 8.* TI is the market leader with about a 45 per cent share, according to research firm Forward Concepts. DSPs and related analogue and "mixed-signal" chips account for about 40 per cent of TI's chip revenues.

Top 10 semiconductor vendors

Rank* 1997	Rank* 1996	Company	Revenue 1997 $m	Revenue 1996 $m	1996-97 growth %
1	1	Intel	[illegible]	[illegible]	[illegible]
2	2	NEC	10,656	10,428	2.2
3	3	Motorola	[illegible]	[illegible]	[illegible]
4	6	Texas Instruments	7,660	7,064	8.4
5	5	Toshiba	[illegible]	[illegible]	[illegible]
6	4	Hitachi	6,523	8,071	-19.2
7	7	Samsung	[illegible]	[illegible]	[illegible]
8	8	Fujitsu	4,872	4,427	10.1
9	9	Philips	[illegible]	[illegible]	[illegible]
10	11	Mitsubishi	4,097	4,100	-0.1

*Ranked by revenue estimates. Source: Dataquest

The company, like many others, is trying to reduce its dependence on the cut-throat Dynamic Ram (D-ram) memory market, which in 1997 contributed around 20 per cent.

Motorola, is similarly trying to find more promising markets. Its 1997 chip sales grew just 0.5 per cent to $8.05bn, according to Dataquest, and its PowerPC processor, once touted as a rival to Intel's Pentium, has struggled outside the Apple market.

Analysts believe its future lies in "embedded" applications, such as consumer products or industrial controls. Motorola also announced last year it would wind down its D-ram business and reallocate capacity to higher-margin memory types such as flash memory and Static Ram.

D-rams – *see report, page 7* – are staple memory chips *found in every computer* but prices are highly volatile. They are commodity items – there is even a spot market for D-rams – and all the top ten chip vendors, apart from Intel, depend on D-rams to varying degrees.

The chip industry has long been used to double-digit growth rates and the lacklustre growth of 5.5 per cent in 1997 is, in part, a hangover from 1996, when a collapse in D-ram prices caused the market to drop 6 per cent – the first fall in almost 10 years. At the beginning of 1997, analysts predicted the chip market would return to its customary double-digit growth, but this did not happen and D-ram prices continued to tumble due to overcapacity.

The benchmark 16-megabit D-ram chip has fallen from around $7 at the start of 1997 to about $2.50 in today's spot market.

The weakness of Asian currencies against the dollar has also hit hard. Toshiba, Hitachi and Samsung, all big D-ram producers, have seen dollar revenues from chips decline by 7 to 19 per cent in 1997, according to Dataquest. The next generation of 64-megabit D-rams, due to be widely adopted this year, could provide some respite for D-ram makers.

The chips are more difficult to manufacture in volume and those companies that quickly master the technology can benefit from higher prices and margins. However, the economic turmoil in Asia is hitting the industry hard, depressing dollar-based chip prices and stifling demand for chips from Asian-based computer and electronics industries. Last month, Motorola said it expected the worldwide semiconductor industry to grow by 13 to 15 per cent in 1998, rather than the 15 to 17 per cent previously forecast and blamed the reduction on Asia.

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ADVANCES IN CHIP PRODUCTION • By Geoffrey Nairn

A string of technological miracles

While bringing innovation to many other industries, the semiconductor industry continues to break its own technical barriers

Last month marked the 50th anniversary of the transistor, whose invention spurred the development of digital computing and ushered in the information age. The anniversary was cause for modest celebration in the semiconductor industry but elsewhere the milestone went largely unnoticed and the silicon chip, through its very ubiquity, is today sadly taken for granted.

Few outside the industry appreciate the string of technological miracles that connect that first rudimentary transistor of 50 years ago with Intel's latest microprocessor, the Pentium II, which squeezes more than 7.5m transistors on to a chip of silicon the size of a fingernail.

From cellular phones to fly-by-wire aircraft, advances in semiconductor technology have brought innovation to many industries. But it is the computer industry that has most reason to thank the three researchers at Bell Laboratories who are credited with inventing the first transistor in 1947.

Contrary to popular opinion, computers would still exist without the microchip. The computing era predates the invention of the transistor and the first electronic computers used arrays of vacuum tubes. But vacuum tubes are no match for the silicon chip in speed, cost or size, and the microchip in a cheap pocket calculator contains more processing power than a roomful of vacuum tubes.

The pioneers of computing could never imagine that semiconductor technology would one day create powerful computers small enough to sit on every office desktop or be held in the hand. One of the first electronic computers, Eniac, *(pictured below)*, contained 17,480 vacuum tubes and its 20 banks of flashing lights, used to indicate the results of its calculations, stretched for 150 feet.

Eniac was developed in the World War Two by the US Army to perform ballistic calculations. It could add 5,000 numbers in a second – laughably slow by today's standards. The first demonstration of Eniac in 1946 is often taken as the start point for the modern era of computing. Fifty years on, researchers at the University of Pennsylvania, where Eniac was developed, celebrated the anniversary by rebuilding Eniac – but in silicon.

"Eniac-on-a-chip" dramatically demonstrates the huge advances that semiconductor technology has brought to computing. Instead of occupying a large room, the silicon version of Eniac measures just 5mm by 8mm. Its 175,000 transistors replace the vacuum valves and mechanical switches of its predecessor.

The latest chip plants can pack 5m or more transistors on a single chip and 200 chips on a single 8-inch wafer – a total of more than a billion transistors on each wafer. At this scale of mass production, the cost of each transistor is a tiny fraction of a cent; in the early days of the semiconductor industry, transistors were made individually and cost $10 or more. The breakthrough came with the discovery in the 1950s of how to simultaneously make hundreds – later millions – of microscopic transistors on a single wafer.

The two enabling technologies were optical lithography, used to mark the tiny features of each chip, and devices called "steppers" which move the wafer in precise steps under the light beam and allow hundreds of the same chip design to be replicated across the wafer.

The key to building a transistor is taking a pure semiconductor material – usually silicon – and selectively "doping" it with impurities to create two distinct regions: one favouring current flow in one direction, which is named "p-type" and the other favouring flow in the opposite sense, called n-type. The junction of the two types can then act as a digital switch, *(see diagram)*.

Using optical lithography, these regions can be created with pinpoint precision by selectively "masking" different areas of the wafer's surface during doping. Another masking process creates superfine slivers of aluminium on the surface of the wafer, which act as circuit lines connecting the transistors.

By linking the transistors together in different ways, they can be grouped to perform various logical functions – memory, counters, dividers and multipliers. With these building blocks, semiconductor designers create today's huge variety of chips, such as digital signal processors, memory chips and microprocessors.

Intel's first microprocessor, the 4004, was introduced in 1971 and contained 2,300 transistors. In 25 years, advances in manufacturing and sophisticated computer-aided design software have allowed Intel designers to squeeze more than 7.5m transistors on a Pentium II processor with circuit lines 0.35 microns wide.

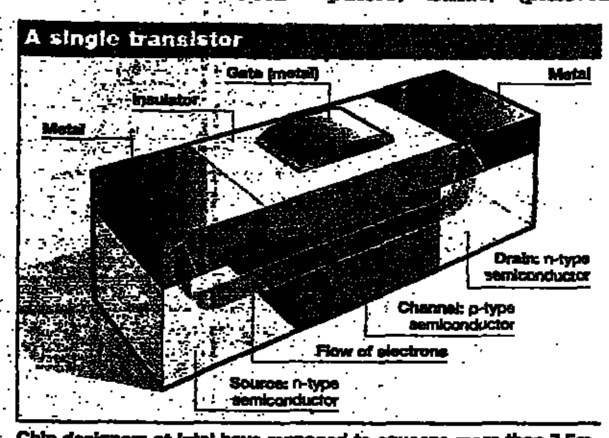
During 1998, most manufacturers will shift to making chips with features just 0.25 microns wide – 400 times smaller than a human hair. Intel already has three "fabs" working at this Lilliputian scale.

The semiconductor industry is used to breaking its own records and the shift to 0.25-micron technology has occurred faster than expected. The Semiconductor Industry Association, a US trade body, predicts that current technologies will enable the industry to shrink features to 0.13 micron over the next five years.

But to go much lower, new techniques will have to be developed as there are formidable challenges when dimensions drop to around 0.10 micron. Conventional optical lithography cannot be used to make features this small, so future chip plants will need to switch to electron beam or X-ray lithography – both at the experimental stage. Copper may have to be used instead of aluminium to make the circuit lines, as aluminium is a poor conductor with lines so thin.

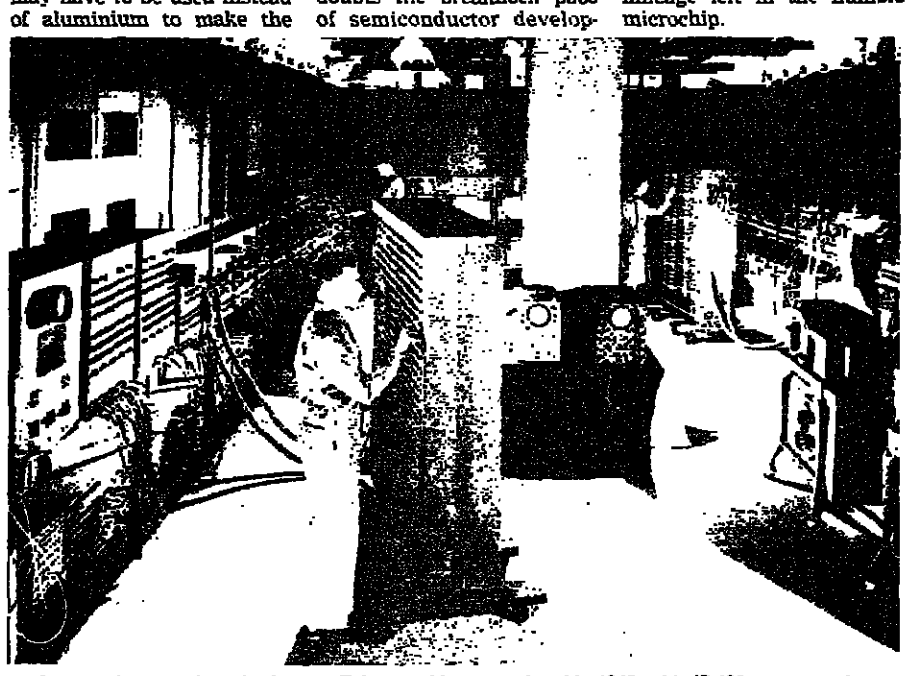
But techniques for laying copper on silicon are still in the laboratory. No-one doubts the breakneck pace of semiconductor development will one day have to slow – fundamental physics, if nothing else, imposes a limit on how small transistors can be made – but the industry still sees plenty of mileage left in the humble microchip.

A single transistor



Chip designers at Intel have managed to squeeze more than 7.5m transistors on to a single Pentium II processor

Everything is getting smaller: this year, most semicondcutor manufacturers will shift to making chips with features just 0.25 microns wide – 400 times smaller than a human hair. Intel already has three fabrication plants working at this Lilliputian scale



Ancient number-crumber: the famous Eniac machine, completed in 1946, with 17,480 vacuum valves and 20 banks of flashing lights, was designed in the US during World War Two to work on ballistic calculations. Its name was an acronymn for 'electronic numeric integrator and calculator'. The war ended before Eniac could be used for military work, so the machine was used for other scientific calculations. Today, Eniac's calculations can be easily handled on a single silicon chip

The man who invented Java

From page 3:

"In the PC world, what was happening was the converging on Intel, and the number of CPUs was pretty small. But in the consumer business the number of CPUs that people were using was really enormous and there were very strong reasons for this diversity."

Such diversity means there are a lot of small markets for software – even within one company. "If you look at all the televisions that Sony makes, for example, they don't all have the same CPU, so it is very difficult for them to have an interchangeable market for software, and it is really the size of a market that determines how attractive it is to developers.

"As we talked to a lot of these consumer companies they were very interested in having the ability to do add-on software, after-market software and have the systems be flexible and open, but they couldn't figure out how to make the market large enough to make it attractive to developers without everyone agreeing on one CPU – and there was really no way to do that."

To overcome this hurdle, Mr Gosling developed a software instruction set which has become known as the 'Java Virtual Machine' – a software layer that sits between the physical instruction set, linked with a particular CPU and the application software. "This deals with this problem of 'mating' an arbitrary piece of software with an arbitrary CPU," he explains.

"The whole thing was motivated by the desire to figure out how to build a market. If you watch Star-trek, it's like the universal translators they have pinned on their lapels."

For all CPUs, the semantics of the basic operations are the same – they all do things such as add numbers together, subtract, multiply and divide and they tend to format numbers similarly. "It's like a dictionary with a set of meanings and every language has a different word. Sometimes there are twists in sentence structures but the fundamental semantics are all the same and the relationships between the languages are the same.

"It is a dramatically simpler problem than translating between human languages. In some conceptual sense, it is a similar problem but, as a matter of *degree*, it is a totally different problem."

Asked about the evolving legal battle between Sun and Microsoft over Java, Mr Gosling says: "I guess at this point I don't know whether it's more frustrating or comic – maybe I have been knocking around in this business for way too long."

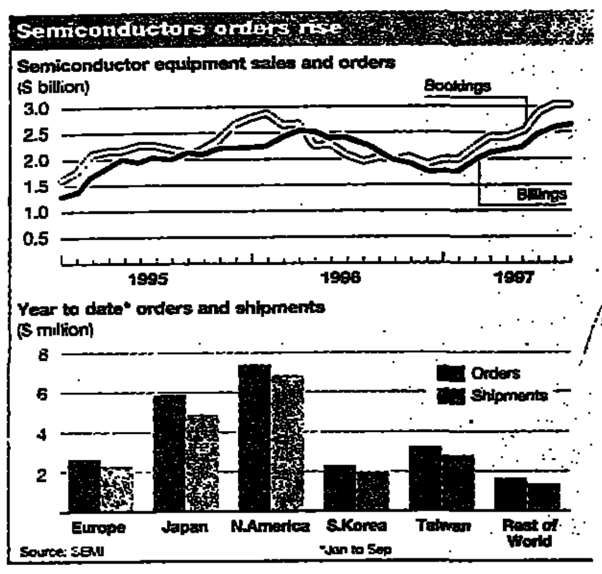
However, he says the reaction of the software development community – his natural constituency – has been "just wonderful, we couldn't have hoped for anything better," he says. "They really want the whole 'write-once-run-anywhere' story to work."

Most hardware manufacturers also have a positive attitude towards interoperability, he adds.

CHIP FABRICATION PLANTS • By Tom Foremski

Costs are soaring to record levels

Ambitious plans by Asian chip-makers could be put on hold due to the problems of raising capital



Building a semiconductor fabrication plant, or fab, is rapidly becoming one of the most challenging projects in the industrial world because of the huge cost of such facilities and the exacting specifications required for a successful facility.

Fabs using the latest chip production technologies currently cost more than $2bn to build – and the cost is rising rapidly. According to Sematech, the US chip manufacturing research and development consortium, a fab will cost more than $10bn by 2015 – more expensive than a nuclear power plant and becoming the single most expensive industrial manufacturing facility.

Companies building today's fabs must not only raise huge amounts of capital but must execute their projects flawlessly, putting the fabs into production as quickly as possible. This is not only to begin recouping their investments but to stay ahead of competitors. The first chip manufacturers that manage to move into production with a new fab will reap higher profit margins. As competitors come on to the market, the supply of chip products increases and thus prices and profit margins begin falling.

The chip industry is now moving to 8-inch-sized silicon wafers from six-inch wafers. This allows manufacturers to fit 77 per cent more chips on to a wafer. Since processing each wafer costs about the same, producing more chips per wafer lowers final chip manufacturing costs.

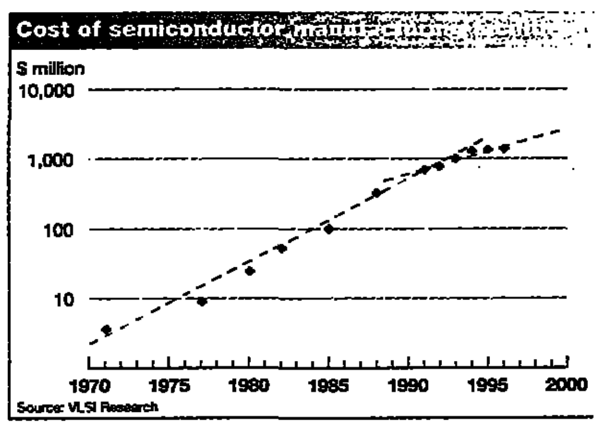
Chip sizes

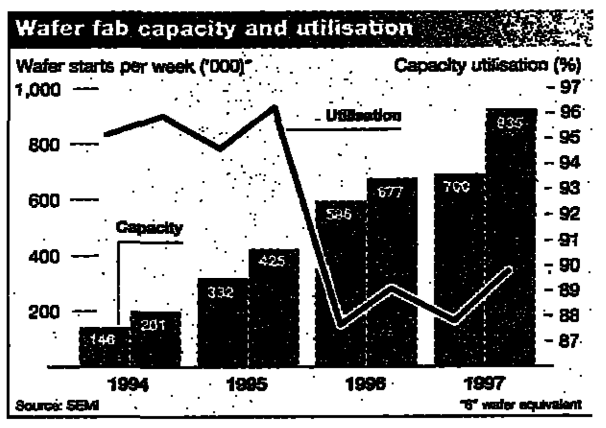
Manufacturers are also trying to shrink the size of the chips, moving to 0.25 micron and below geometries from 0.35 microns. Smaller chips means more chips per wafer, further lowering manufacturing costs. Smaller geometries means challenges in preventing chip contamination which requires more expensive clean-room facilities to eliminate dust and other particles that can settle on chips and ruin them during processing. Testing smaller chips is another challenge, requiring expensive testing systems. Manufacturing chips relies heavily on the latest technologies and production equipment, but it is as much an art as a science. Intel, for example, owes much of its success to its expertise as a manufacturer. Its manufacturing process expertise is virtually unparalleled which means it can quickly bring in new manufacturing technologies and lower production costs, and thus lower final selling prices much faster than its competitors and keep hold of a huge market share.

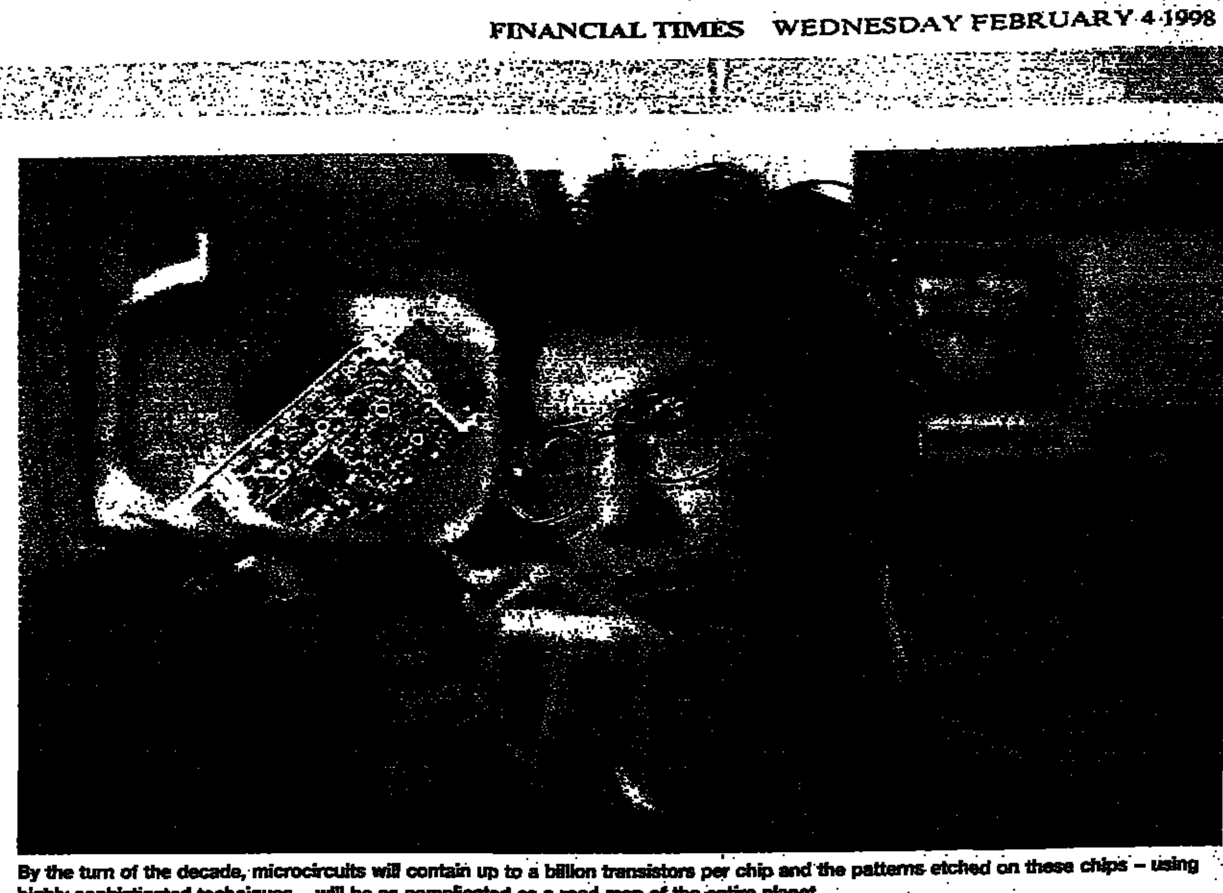
An Intel competitor, Advanced Micro Devices (AMD), is trying to wrestle away some of the microprocessor market from Intel, but it stumbled last year because it could not increase chip yields and fell behind in bringing on its 0.25 micron manufacturing process. AMD has overcome many of those problems but it shows that having good chip technology is not much good if you have an inefficient fab.

Not every chip company *has* a fab: the US Fabless Semiconductor Association (FSA) has 59 members and their revenues are growing much faster than the chip industry as a whole. These companies rely on excess fab capacity around the world to produce their chips. But they risk running out of fab capacity.

With fabs becoming so expensive to build, the market research company, Dataquest, expects far fewer fabs to be started this year. In 1997, there were more than 50 fabs started, but this year, Dataquest expects this number to drop to about 30. And with the current Asian economic crisis, it may drop even further because aggressive plans by Asia chip makers could be put on hold due to the added difficulties of raising capital.







By the turn of the decade, microcircuits will contain up to a billion transistors per chip and the patterns etched on these chips – using highly sophisticated techniques – will be as complicated as a road map of the entire planet

ADVANCED RESEARCH • By Paul Taylor

Increasing co-operation among top producers

New research alliances and partnerships, joint ventures and shared pilot projects have all become features of the chip industry

Five weeks ago, the 'point-contact' transistor – the basic building block of integrated circuits invented by a team of Bell Labs scientists in 1947 – celebrated its 50th birthday.

Today, transistor-based technology runs everything from microwave ovens and mobile phones to the increasingly powerful communications networks that span the globe.

In the 1960s, transistor radios contained between six and ten transistors, but the fingernail-sized microchip in a modern mobile telephone handset contains as many as 5m of these tiny devices and 200 chips can be made from every 8-inch silicon wafer. Meanwhile, the costs of this technology continue to plunge. During the 1950s, the cost of each transistor fell from about $45 to $2, but today's transistors each cost less than 100-thousandth of a cent.

By the turn of the decade, Lucent Technologies predicts that microcircuits will contain up to a billion transistors per chip and the patterns etched on to these chips.

The first person to integrate or 'print' initially dozens, then thousands of transistors on to a single piece of silicon was Jack Kirby at Texas Instruments in 1958. The integrated circuit has been on a remarable journey ever since. Size, energy consumption and price have spiralled down, while reliability, speed and performance have soared.

In 1965, Gordon Moore, the engineer who later co-founded Intel, crystalised this trend into his eponymous 'law' which says in essence, that the number of transistors per chip will double every 18 months.

> 'The future, like the past, will be full of technological surprises'

A second, less frequently quoted dictum is that the cost of the fabrication plants – 'fabs' – used to manufacture silicon chips, will double with each new generation. So far, both laws have proved remarkably accurate. While transistor densities *have indeed doubled roughly* every 18 months, the price of a new fab has risen from $250m in 1990 to around $1bn today.

In an article written a few months ago, Mr Moore, now chairman emeritus of Intel, said: "To be honest, I did not expect this law (No 1) to still be true some 30 years later, but now I am confident that will be true for another 20 years.

"By the year 2012, Intel should have the ability to integrate a billion transistors on to a production die that will be operating at 10Gh. This could result in a performance of 100,000 Mips (millions of instructions per second), the same increase over the currently cutting edge Pentium II processor as the *that* processor was to the 386.

"We see no fundamental barriers in our path to Micro 2012, and it is not until the year 2017 that we see the physical limitations of wafer fabrication technology reached."

Indeed Moore's law has become the 'metronome' for the industry and the driving force behind the innovations and breakthroughs that are announced almost monthly.

Among recent developments, a private consortium led by Intel, Advanced Micro Devices and Motorola was formed last September to work with US government agencies to develop the advanced lithography technology which will be used to build chips with 100 times more computing power and 1,000 times more storage capacity.

IBM has found a way to wire semiconductors with copper, rather than with aluminium, now currently used, which IBM says should 'dramatically change of the process of making chips'

The process by which circuit patterns are etched on to chip surfaces is called lithography: this involves shining ultraviolet light through a patterned mask on to a chemically-sensitive layer on the chip surface.

However, for any specific technology, a physical limit is reached where the wavelength of the light is bigger than the smallest features on the chips. This is the issue that the Intel-led consortium plans to crack by developing a new lithographic process using Extreme Ultra Violet (EUV) light. The partners believe this will enable the industry to etch circuit lines smaller than 0.1 microns.

EUV is essentially a further refinement of the existing UV process. However, the industry is hoping that it will stave off the day when manufacturers have to make the switch to a totally new technology such as X-ray lithography. "At that stage, we will require an entirely different environment," says Tim Keating, Intel's director of marketing in Europe.

A few days after the EUV announcement, IBM said that after 10-years of research, it had developed a way to use microscopic copper wiring, instead of aluminium, inside chips – a development which will enable IBM to build faster and cheaper chips beginning with application specific integrated circuits, (Asics).

"It is very significant because it allows us to break through to the next level of shrinkage in the size of chips," says of Bill LaRosa, head of IBM Microelectronics in Europe. "Costs fall, functions rise and the consumer gets more for less."

Using copper-based technologies will enable IBM and other semiconductor manufacturers to move from current line widths of 0.25 microns to 0.18 microns and then 0.12 microns. As a result, the number of transistors on a single chip will mushroom again to between 150m and 200m.

Mr LaRosa describes the move to copper-based microchip technology, the transition to larger 300mm silicon wafers which will take place over the next few years, providing advances in lithography as "the three pillars for the next generation" of semiconductors.

Such advances will help ensure that the industry keeps pace with Moore's law and that, every three-and-a-half years or so, the next generation of denser, faster chips appears.

To keep up with such a hectic pace of research and development amid escalating costs for new 'fabs', the leading semiconductor producers have been forced to co-operate in an unprecedented way.

New alliances and partnerships, joint ventures and shared pilot projects have all become features of the industry and the Semiconductor Industry Association, the US-based trade group, even publishes a 'road-map', setting out the technologies that its members must develop if they are to maintain the pace of innovation and remain competitive.

Another problem for the semiconductor industry to overcome is designing ever more complex chips. For mainly economic reasons, the semiconductor industry is moving towards so-called 'systems-on-a-chip' – semiconductors which combine several previously separate functions on a single piece of silicon – *see reports, pages 8 and 11.*

"If we look over a long enough time horizon, all electronic systems will migrate to a single chip," says Jack Harding, chief executive of Cadence, the chip design specialist and tool vendor. However, designing such complex devices is likely to become increasingly difficult.

"We will have to teach people to design with large function blocks, but they will also have to consider the design at electron level," he says.

Some time after 2010, the industry will reach some particular tough roadblocks erected not by the limitations of technology, but by the laws of quantum physics.

Several possibilities for surmounting these obstacles have been suggested in the past. One option, popular a few years ago, was to propose 'optical computing', using light instead of electricity, and optical switches instead of transistors.

Another more popular option recently has been to suggest building devices that use quantum physics.

Early quantum-effect devices were first devised in the 1980s and recently there have been reports of success in building a type of quantum device – the 'single-electron transistor'.

In the *meantime, the semi*conductor industry believes that today's technology which is based on so-called field-effect transistors, still has plenty of potential, including the possibility of using more efficient semiconductors such as gallium arsenide to replace silicon in some applications.

If one thing is clear from the history of the transistor, semiconductors and the microprocessor, it is that the future, like the past, is likely to be full of surprises.

MICROPROCESSOR MARKET • By Tom Foremski

The key profit generator

Dominated by Intel, the microprocessor sector has revolutioned computing as chip performance power has doubled every 18 to 24 months since 1971

The microprocessor market represents the chip industry's most profitable product segment, and it is the engine that drives the PC industry which, in turn, is the main driving force for the IT industry and the applications that make the industrial world so productive.

The microprocessor market in 1997 was valued at about $17bn according to Dataquest, the US market research company, which predicts an average 18 per cent annual growth for the next couple of years to reach $33.6bn in 2000.

For many people, the microprocessor is synonymous with the computer. Since the first microprocessor was made – the Intel 4004 in 1971 – the microprocessor has revolutionised computing. Raw performance of microprocessors has been doubling every 18 to 24 months, following a trend noticed by Intel cofounder Gordon Moore, and immortalised as Moore's Law.

The microprocessor continues to grow in power and is moving into ever-larger systems capable of being used in parallel with hundreds and even thousands of units, and providing supercomputer levels of performance. And microprocessor makers such as Intel, IBM, Motorola and others, continue to push the limits of what is possible.

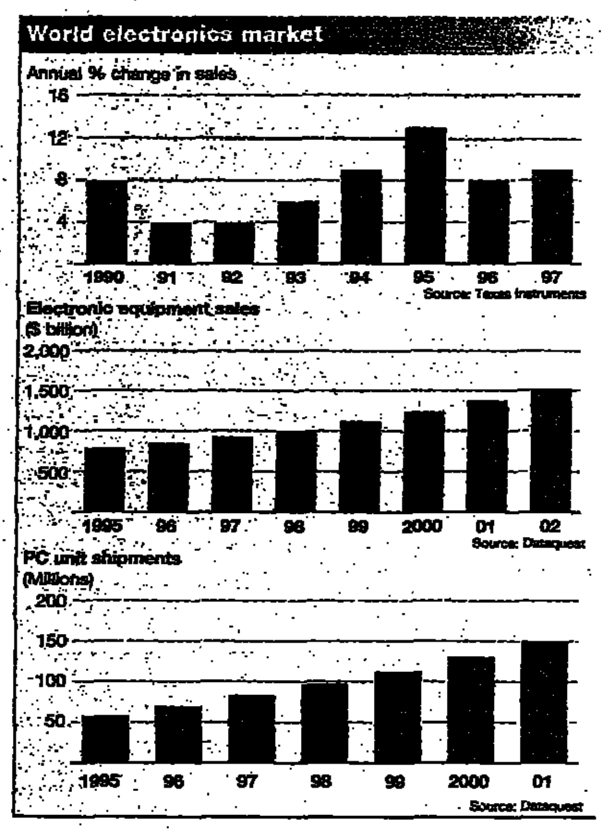
Some of the key trends in microprocessor designs were revealed at the Microprocessor Forum, held in October of 1997. This is a key industry event when leading companies reveal details of forthcoming chips.

Intel, which dominates the microprocessor market, revealed details about its eagerly-awaited Merced microprocessor, capable of processing 64 bits at a time, compared with its current 32-bit Pentium line.

With 64 bits, Merced-based systems can handle larger applications, competing with mainframe type systems.

Representatives from Intel and its co-development partner Hewlett-Packard revealed the first details on their four-year-old Merced project. There had been speculation that Merced would make use of an experimental technology called "very long instruction word" (VLIW) technology, in which powerful software compilers are used to split-up software code among several execution units to process the instructions in parallel.

Intel did indeed describe a VLIW-type architecture, preferring to call it Epic, for "explicitly parallel instruction computing", and saying that it represents a new approach to microprocessor design.



"We need to get beyond traditional microprocessor architectures – and the key is parallel instruction processing which we believe will be important to scaling microprocessor architectures for future applications," said John Crawford, director of microprocessor architecture at Intel, speaking at the conference. "We have taken an approach that includes headroom for future requirements."

Currently, high-end microprocessors such as the Pentium II, and all of the other leading microprocessor designs, try to process several instructions at a time. This is done by trying to predict what the next instruction will be and load that instruction into the microprocessor's memory. These are known as "superscalar" technologies, but they can slow down a microprocessor since there is a significant overhead that the processor must carry that limits bow far superscalar techniques can be used.

With a VLIW or Epic approach, powerful software compilers are used to analyse an application's code. The compiler looks at the structure of the program and tries to determine which parts can be executed in parallel. The compiler then feeds the code to multiple execution units on the microprocessor chip.

These execution units are designed to be small, simple, and very fast. But this approach brings its own problems and shifts much of the performance of the microprocessor on to how well the software compiler performs.

Not to be outdone, Intel competitors, such as Advanced Micro Devices, Cyrix and others, said they will respond to Merced with powerful microprocessors of their own. And companies such as IBM, Sun Microsystems and Digital Equipment, described 64-bit microprocessors that will be shipping well before the 64-bit Merced comes out at the end of 1999.

Sun Microsystems discussed its 64-bit UltraSPARC III chip which will be out in mid-1998. And IBM introduced its Power3 microprocessor, the latest in its PowerPC family. The Power3 will run at 500 Mhz and above, and will be used for a new generation of high-performance technical workstations.

The Power3 will be built in IBM's copper technology which replaces aluminium-based connectors for faster processing. It is also capable of processing as many as eight instructions at the same time.

Millions of transistors fit on the tip of a finger: 100 of Lucent's microchips barely make a handful – but each chip can contain more than 5m transistors. The chips are used for a wide range of communications and computer products

Another key trend for microprocessors is to include memory and other logic functions such a video controllers all on the same chip. This is the main focus for Intel competitor Cyrix, which is working on a low cost integrated microprocessor that will allow for the manufacture of very cheap PC type devices. This is because the integrated microprocessor will contain most of the circuitry of a PC on a single chip, making it very easy to use in a variety of different applications.

Although microprocessor performance continues to follow Moore's law, increasing microprocessor performance no longer directly translates to the same increase in system performance. This is because the connections, known as 'buses', between the microprocessor and the rest of the system, plus memory speeds, cannot keep up with the microprocessor. To try and eliminate some of these bottlenecks, there is a trend to place more memory on the microprocessor chip.

The microprocessor market also includes embedded microprocessors and microcontrollers. These are essentially low-cost versions of microprocessors that are used in non-PC type devices but provide valuable computing functions in applications such as industrial and manufacturing systems, household appliances and entertainment systems.

Embedded microprocessor markets are growing quickly in size: companies such as Motorola and IBM are targeting this market with low cost versions of their powerful PowerPC microprocessors. There is also a move to add Java processing capabilities to embedded microprocessors and microcontrollers. Sun has licensed its PicoJava processor core to several big chipmakers around the world.

Adding Java processing capability to a microprocessor does not take up much space on the chip but it allows systems that use such chips to be able to quickly process programs written in the computer language, without needing an operating system and large amounts of memory.

D-Ram chips • By Laura Tyson

A market plagued by over-supply

Korean suppliers, with 35 per cent of global D-Ram chip output, are now seeking to stabilise the market

The notoriously fickle market in dynamic random access memory (D-Ram) chips is bouncing along the bottom with no improvement likely without a concerted effort by manufacturers to limit production.

But Korean producers appear to be regrouping after the devastating collapse in the country's economy last year and are moving to stabilise the market. Furthermore, the US D-ram maker Micron Tech is expected to sue Korean, Japanese and Taiwanese producers for dumping, which should eventually help the market by forcing Asian producers to reduce volume.

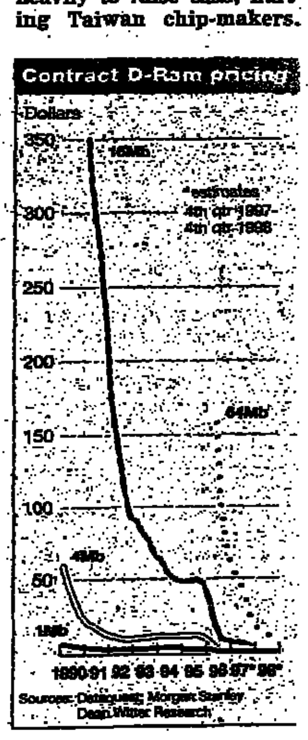
But the over-supply conditions plaguing the market are not likely to evaporate soon. Despite a mild recovery in early January, D-ram prices have been at historic lows, well below the cost of production.

Electronics industry analysts said the prices had rebounded 30 per cent to about US$2.50 from about $1.80 apiece in the fourth quarter of last year. But Liu Chi-tung, an analyst at SBC Warburg, said the revival would probably be short-lived, and prices would return to around $2.00 in early February.

"It's clear that the industry is quite weak," he said. "We're looking for a turning point, when the share prices of D-ram makers might go up."

Meanwhile, orders from the US have slowed somewhat due to uncertainties over fallout from the Asian financial crisis.

The financial collapse in Korea, coupled with a dramatic depreciation in the won, prompted initial fears that Korean D-Ram producers would begin dumping heavily to raise cash, hurting Taiwan chip-makers.



But so far, those fears have proven largely unfounded.

"Korean producers have been consistently keeping a high level of D-Ram output," says Mr Liu. "There's been some dumping, but basically it's just the nature of the semiconductor business – you have to keep the fab running at a high capacity utilisation rate, even if it isn't profitable."

And at recent prices, no-one is making a profit. In Taiwan, the production cost is $3 to $4 per chip. The good news is that a number of Asian D-Ram makers are scaling back expansions, announced or otherwise. Korea's LG Semicon has spoken of a 50 per cent cut this year in planned capacity expansion, and Hyundai and Samsung each plan 30 per cent capital expenditure cuts in their electronics businesses.

Delays

Japan is expected to reduce its expansion plans by 20 per cent, and Taiwanese producers are quietly delaying expansion plans.

"The Korean producers are clearly trying to control the price, to bring it back up to $2.5 or $3," says Andrew Lu, an electronics analyst at BZW-CSFB. As Korean producers hold a combined 35 per cent share of global D-Ram output, the highest of any one country, they can exert a certain influence.

□ Taiwan's semiconductor industry: see page 10.
□ Japan: see page 10.

DIGITAL SIGNAL PROCESSORS • By Tom Foremski

US makers lead race to supply DSP markets

Texas Instruments expects the DSP market and the related mixed-signal/analog chip market to exceed $50bn Over the next ten years

The digital signal processor chip market is one of the fastest growing sectors of the semiconductor market and has become a key focus for several US companies, especially Texas Instruments which is investing heavily in DSP products.

DSPs are special chips that process mathematical functions very quickly – much more quickly than general purpose microprocessors and at much lower cost.

DSP demand is being fuelled by a wide range of mass-market consumer electronics products, especially digital cellular phones, modems, disk drive controllers, digital video disk (DVD) audio and video processing, and a myriad of other applications.

"DSP chips are very good at processing analog signals that have been converted to digital formats: they are the best way to modify or process those types of signals," says Will Strauss, head of the US market research company, Forward Concepts.

"US companies are leading the DSP market mainly because they have the electrical engineers and applied mathematicians that understand the mathematical algorithms that DSPs use."

The main focus for the big companies in this market – such as TI, Lucent Technologies, Motorola and others – is the programmable DSP market which, according to Forward Concepts, is growing at about 30 per cent a year and was valued at more than $3bn in 1997.

The DSP market also includes general-purpose DSPs, fixed-point DSPs, market and application-specific DSPs and also a trend to combine DSP cores on chips along with memory and other logic functions to reduce chip counts in various applications and thus reduce the final price of products.

In-Stat, a US market research company, predicts a bright future for all types of DSPs: it expects the programmable DSP market to reach $9bn by 2001. It is becoming difficult to track DSPs because they are increasingly found as a component of other chips and could be counted in microprocessor, microcontroller and custom chips, says In-Stat.

Intel, which leads the microprocessor market, is increasingly adding DSP functions to its microprocessors through its MMX technology. This allows Intel microprocessors to act as expensive DSPs in processing functions such as digital audio and video. These functions could be carried out by including a DSP chip that costs a fraction of a Pentium microprocessor, but Intel has been keen to encourage third party developers to use software based DSP processing using its microprocessors.

"It is possible to run a software modem, for example, on a Pentium-based PC, but that will take up a significant proportion of the system's processing resources and will slow down the system if users are running several applications," points out Mr Strauss.

Intel has used a Pentium-based PC to run DVD-based digital video in software rather than using special DSP-based chips, but – so far – the Intel approach has produced jerky images, something which will be improved as Intel produces more powerful microprocessors.

Although wireless communications applications are the main market for DSPs, within the next three years this will give way to new applications in automotive, industrial, entertainment systems and other consumer electronics applications, some of which are virtually impossible to predict.

Key supplier

This bright future for DSPs has attracted Texas Instruments, which has developed some of the industry's most powerful programmable DSP chips.

"TI is a major supplier, along with Lucent Technologies. TI performed very extensive market research and concluded that the PC market was pretty much locked-up by Intel but there was a huge emerging market for non-PC based low-cost digital electronics devices where DSPs will be needed," explains Mr Strauss.

TI expects the DSP market and the related mixed-signal/analog chip market will grow to more than $50bn over the next ten years. This growth is similar to the growth of the microprocessor market, which is the single largest sector of the chip market, the company says.

"Real-time processing capabilities are the key, and they are driven by programmable, digital signal processing solutions," said TI's chief executive, Tom Engibous, speaking at an analyst conference in San Francisco last year. "In the PC microprocessor world, which is not real-time, you watch an hour-glass while you wait for processing to be done. In the DSP world, you get the end results without even being aware of the processing steps. Digital signal processing is the engine that enables this real-time digital revolution."

"We believe the market demand for DSP solutions will explode. It's safe to say that if you look ten years ahead, many of the DSP applications that will be common *then* haven't even been invented today," added Mr Engibous.

Strategy

TI has essentially bet the company on DSP and now holds about 45 per cent of a fast-growing market, according to figures from Dataquest, the US market research group. TI has more than 100 software engineers working on new DSP algorithms and it has established a $25m venture capital fund which has already made investments in small startup companies developing key DSP technologies.

The real key to effective use of DSPs will be their integration into system-on-a-chip type products. These will combine DSP cores with other chip functions, all on the same chip.

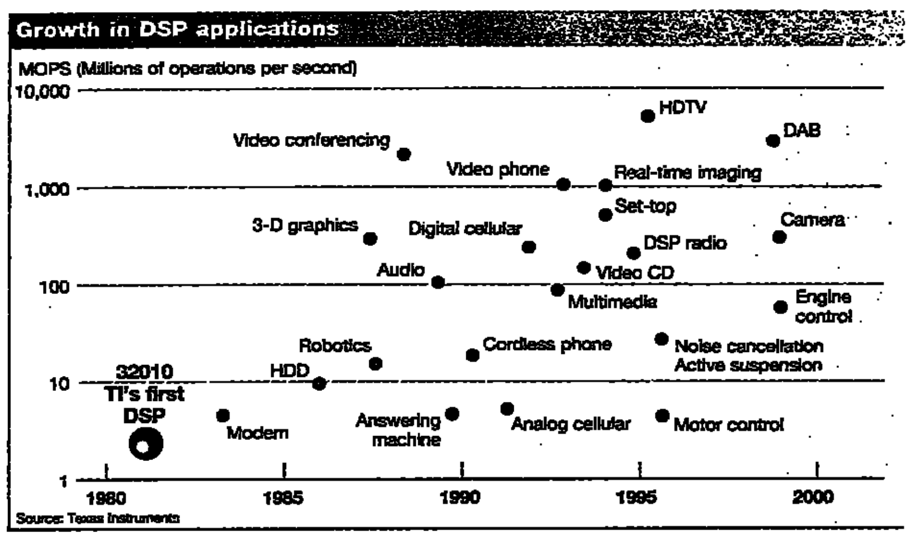
"It is very difficult to build such integrated chips," says Nathan Brookwood, senior chip industry analyst at Dataquest. "The reason is that debugging and testing such chips is difficult and time-consuming because you have to perform so many different tests."

Despite these challenges, TI, Lucent, Motorola, National Semiconductor, LSI Logic and others are pushing ahead with their system-on-a-chip plans.

Those companies that are successful will be able to offer powerful chips which include DSP, microprocessor, memory and logic functions on a single chip at relatively low prices. This will spark a boom in the manufacture of a wide range of low-priced digital consumer electronics products.

Intel, the leader of the microprocessor market, is increasingly adding DSP functions to its microprocessors through its MMX technology

Growth in DSP applications



Source: Texas Instruments

CUSTOMISED CHIPS • By Tom Foremski

Big prizes but high risks in system-on-a-chip projects

With a worldwide shortage of highly skilled chip designers, companies attempting system-on-a-chip projects face substantial challenges in terms of time and money

Thanks to the relentless advance of Moore's law – named after Intel co-founder Gordon Moore's observation that the number of transistors on a chip doubles about every 18 months – it is now possible to shrink entire motherboards containing dozens of chips on to a single chip.

These custom and semi-custom chips, sometimes referred to as system-on-a-chip or application specific integrated circuits (Asics) represent considerable cost savings when manufacturing high volumes of an electronic device. After all, it is simpler to assemble a product with one or two large Asics than it is to build and test products with several dozen chips.

System-on-a-chip devices have been around for some time, but now with advanced chip production techniques, it is possible to build such chips with more than 8 million transistors, effectively shrinking several boards worth of chips into a tiny sliver of silicon. And by the year 2000, it will theoretically be possible to build system-on-a-chip products with as many as 100m transistors, predicts the US market research firm, Dataquest.

Analysts estimate that the system-on-a-chip market will be worth about $15bn by 2001 from about $4bn this year. The leading suppliers in this market include companies such as IBM, LSI Logic, VLSI Technology and Lucent Technologies.

But designing and manufacturing a system-on-a-chip is one of the most challenging projects facing semiconductor companies. The reason is that combining different functions on to the same chip requires sophisticated software design tools that can also simulate the operation of the finished chip.

Manufacturing such chips also requires the latest and most expensive chip manufacturing equipment and then there is the testing of the chip, a huge challenge in itself.

On top of this, there are the marketing challenges, explains chip design consultant Ron Collett, president of Collett International. "Producing a system-on-a-chip is extremely complex, expensive, time-consuming – and risky. You need to identify a market and a product that can be produced in very high volumes to make it work. And it is exceedingly difficult to determine what will be a high-selling product two years into the future."

The big trend toward system-on-a-chip production, has led to the creation of the Virtual Socket Interface (VSI) Alliance. This is an attempt to create a market for chip designs that can be licensed to companies working on a system-on-a-chip project, so that they can buy a disk drive interface component, for example, instead of having to design that function themselves. This speeds up design times and reduces the cost of the project.

The goal of the VSI Alliance is to develop and promote open standard specifications related to data formats, test methodologies and interfaces, that will allow companies to mix and match blocks of integrated circuit functions, known within this context as intellectual property (IP), from many different sources.

But creating a system-on-a-chip from an IP library is not as easy at it seems, warns Wilf Corrigan, chairman of LSI Logic, one of the most successful system-on a-chip companies. Speaking at the IP Forum conference in Japan, last October, Mr Corrigan said that LSI has consistently underestimated the complexity of system-on-a-chip designs despite its extensive experience in this market. He estimates that high-end designs have taken five times more engineering man-hours than first estimates.

LSI has produced the market's most successful system-on-a-chip product so far, providing Sony with the Asics for its popular Play Station videogame console. LSI is also working on chips targeting digital cameras and digital TV sets.

The key reason for the difficulty in such chip design projects it that the chip design tools, known as Electronic Design Automation (Eda) software, is unable to easily handle such large projects. With a worldwide shortage of highly skilled chip designers, companies attempting system-on-a-chip projects face considerable challenges in terms of money and time and must execute their projects perfectly if they are to succeed in their efforts.

"There has been a design gap for some time," points out senior analyst Bryan Lewis, head of Dataquest's Asic research program. "Companies would be able to design system-on-a-chip products with much higher numbers of transistors if they had the design tools available."

Mr Lewis says that efforts such as the VSI Alliance will help reduce design costs which can run to more than $1m for a first generation device but it will take a year or more before the technical and legal issues are settled.

Cadence Design Systems, the leading developer of chip design tools, is working on developing the tools that system-on-a-chip designers need, especially tackling the verification issues which test to see if a design will work as planned.

"We are at a critical point in the evolutionary process for realising advanced systems in silicon with next-generation products.

"However, the complexity of these devices has created a massive verification crisis that spans across system and chip domains," says Jack Harding, senior vice president of Cadence's strategic business group.

Cadence has been making big investments in new software tools and in chip design centres that can help companies with their system-on-a-chip projects. It recently announced that it will open a large chip design centre in Scotland that will employ as many as 1,900 staff.

European chip companies such as Philips Semiconductors and SGS-Thomson have contracted with Cadence to provide some of the tools they need for their system-on-a-chip projects. Philips, for example, recently signed a $30m deal with Cadence.

One of the most ambitious system-on-a-chip projects now under way is National Semiconductor's efforts to shrink a powerful PC system onto a single chip – *see National Semiconductor profile, page 11.*

National acquired Cyrix, which has a family of Intel compatible microprocessors and it has also acquired key technologies from other companies. The goal is to be able to develop a chip that could be used to produce PC based devices that would sell for as little as $200 and open up a potentially huge consumer electronics market.

Even though there are significant challenges ahead, system-on-a-chip products are being produced that push the boundaries of current technology and will result in lower prices for a wide range of consumer electronics devices ranging from wireless communications devices to entertainment systems and PC-type devices.

Producing a system-on-a-chip is one of the most complex problems facing semiconductor companies

CHIP DESIGN TOOLS • By Philip Manchester

Rising complexity brings headaches for chip designers

Within a decade, producers may be putting 100m transistors on a single chip

More than 30 years ago when Intel co-founder Gordon Moore said that chip complexity – and power – would double every two years, his assertion was greeted with scepticism. But the prediction was accurate enough to become enshrined as one of the few genuine 'laws' governing computer development.

Moore's Law *(see report, pages two and six)* is now accepted as the guiding principle of increases in chip power. The power and complexity of modern chips such as the Intel Pentium Pro – with more than 5m transistors and a processing power of more than 100m instructions a second – bears out Moore's prediction.

If the law continues to hold true – as expected – we will see 100 million transistors on a single chip within a decade.

While this astonishing improvement in power has brought many benefits in the form of more powerful, less expensive computers, it has also become a growing nightmare for chip designers. The complexity of modern chip designs demands increasingly complex tools to both create and test new designs.

"Twenty years ago, the designs were relatively simple – designers could think of the chip as being like a circuit board. But now the complexity is so great you have to design a new chip on a computer," says Andrew Patterson, technical director of Analogy UK, an electronic design automation (EDA) specialist.

"Not only is the complexity so much greater – the investment needed to build a new chip is so high, that you need to get as much of the design as possible sorted out before you start producing the chip," adds Mr Patterson.

Modelling chips is now so complex that designers are having to take a higher level view of the design – just to cut the time it takes to create it. "You could model every transistor in the circuit, but it would take weeks to simulate," he says. "If you take a high-level functional view, you can cut the simulation time to reasonable levels."

Aidan Kelly, an engineer at IBM Micro-electronics in Sweden confirms this view: "On the one hand, the more complex physical design makes things difficult. But on the other hand, the sheer volume of things that need to be verified in a design causes all sorts of problems. You have to allow for a timing budget and noise budget because of the level that you are working at. We have been working with our industry partners like Synopsys to enable our design tools to cope with the problems."

The physical layout of chips borders on the limits of the laws of physics, he says. "We are talking about four or five layers of metal on chip and soon we will be measuring the width of the linking 'wires' in atoms."

As if the complexity and scope of modern chips were not enough, another trend in design – towards the ideal of a complete system on a single chip – introduces yet more problems for the designer.

"If you take something like a mobile phone, the trend is to have less and less chips in the device. This means you have to combine both digital and analogue processing within the same chip. So over the last ten years we have had to build tools that can simulate both," explains Mr Patterson of Analogy.

The trend towards complete systems does, however, mean that design engineers can take advantage of existing tried-and-tested circuits. In the same way that software production is being revolutionised by re-use of software code, through use of object-oriented design technology, semiconductor production can also gain benefits.

"Engineers are learning to re-cycle design components so you can put a chip together with building blocks – the same way that you would assemble a motor car. A large part of our market is for customers who are building application-specific integrated circuits (Asic). They use class libraries of circuit designs to build their custom chips," Mr Patterson explains.

Asics are chip templates with many of standard functions built into them. Manufacturers can use them as the starting point for a custom-built chip and cut their design effort substantially. The emergence of standard modelling languages such as the US Institute for Electronic and Electrical Engineering's (IEEE) VHDL will help designers to re-use designs from different sources more effectively.

In June, the IEEE is expected to publish details of extensions to VHDL to accommodate mixed-signal chips and bring forward the day of the 'system-on-a-chip.'

The world market for mixed-signal chips is growing quickly because of the demand for devices such as scanners and digital cameras. Europe represents about 35-40 per cent – "but the Asian market is coming up quickly too," says Mr Patterson. The result is that designers will need to make even greater use of EDA tools as Moore's Law's relentless growth in complexity continues.

Gordon Moore, chairman emeritus of Intel: his predictions on chip power have proved to be remarkably accurate

CHIP MANUFACTURING • By Mark Vernon

Producers are for ever breaking new barriers

Semiconductors manufacturers have a long history of 'doing the physically impossible'

Moore's Law, which states – in its most quoted paraphrase – that the number of components that can be packed on a computer chip doubles every 18 months, while the price stays the same, has held true for more than 30 years.*

The law has remained true, thanks largely to innovations in semiconductor fabrication technology, comments Richard Gordon, industry analyst at Dataquest.

Even now, Moore's legendary law shows no signs of being rescinded and – in spite of challenges – semiconductor developers are in confident mood. However, the battle to achieve exponential levels of progress is being fought on at least two fronts. Firstly, reductions in transistor feature size and, secondly, increases in the silicon wafer size from which chips are cut.

State-of-the-art technology is moving from the laboratories to fabrication plants – known as 'fabs' – involving investments of billions of dollars.

The first trend concerns the use of copper instead of aluminium for chip circuitry, and the second the switch from 200mm to 300mm diameter silicon wafers, as the standard.

The use of copper is led by IBM which expects to see volume production by the turn of the century. The reason for switching to copper is that it is a better conductor of electricity which not only means faster chips, but ones with lower power consumption and better thermal performance, important in the fastest growing applications sector such as mobile phones and PCs.

At dimensions of below 0.20 microns, IBM predicts that chips will show between 30 and 40 per cent better performance compared to aluminium. But the ability to replace aluminium in this way is a considerable achievement since in, its natural state, the metal is absorbed into silicon over time, disrupting the functioning of the chip.

IBM also predicts it will be able to reduce manufacturing costs by around 20 per cent with the introduction of copper because of a reduction in the number of processes required during manufacture.

"As a result we are going to be able to put more than 150m transistors on to a chip, which represents something like the power of 30 Pentiums and is essential for advances in 'application-specific integrated circuits' and the move towards 'the system on a chip'," concludes Rupert Deighton of IBM Microelectronics, Europe.

The move to 300mm wafers poses daunting, if not insurmountable, problems. In the mainstream semiconductor industry, those that ultimately succeed are those with the lowest die cost. Therefore, investment in 300mm wafer capability by a semiconductor vendor is absolutely essential because it allows more die per wafer, reducing the cost to manufacture a single die, explains Richard Gordon of Dataquest.

The issues break down into three key areas: technical readiness, business justification and strategic advantage.

On the issue of technical readiness, it is not so much the high technology which presents the toughest challenge, such as cross-wafer uniformity and stable temperature profiles, as simply transporting the wafers around the plant.

Fabs are built from the ground up and even the smallest miscalculation in designing the flow can lead to substantial losses further down the line. Most processes are not yet fully automated, and moving 300mm wafers 1mm thick requires answers to basic questions on handling, apart from all the other issues involved in the manufacturing processes, says Didier Lamouche, general manager at IBM's new Essonnes fab.

When it comes to the business justification, it is question of the number of chips that can be cut from one wafer. More than twice the number of chips can be cut from a 300mm silicon wafer as from a 200mm, with more than 250 chips per wafer needed to justify using any given size.

On the one hand, this implies that 1GB D-Ram chips will need to be produced from the larger size of substrate, but on the other hand it means that the volume of chips needs to be high to meet the extra costs, and would currently only be met by D-Ram demands.

The third issue is the strategic one, positioning investment in a fab against competition. What it comes down to is that no-one wants to be first with a new production, since that would mean expensive testing and debugging which could quickly be learnt from others, in what is a 'transparent' industry.

Pioneers of 50 years ago: Dr Walter Brattain, left, with Dr William Shockley, seated, and Dr John Bardeen, inventors of the transistor at Bell Labs in December, 1947. The trio received the Nobel Prize in Physics in 1956 for their discovery of the transistor effect

Against this wait is the fact that market prices of individual devices fall by at least 20 to 30 per cent a year, a point that bears heavily on manufacturing costs, which are high.

"Producers need to be almost first in order to benefit from the higher prices in the market at that time," says Mr Lamouche. "But to be the very first is high risk. The 'decision window' is very narrow."

The first volume 300mm manufacturing is expected in the next four or five years.

Looking to future technical hurdles facing the industry, one that will appear within about five years is the 0.1 micron limitations of today's photo-lithography. The industry is now evaluating alternative methods of patterning wafers, such as e-beam and x-ray techniques, but no clear direction has yet come to the fore, observes Mr Gordon.

This is primarily because no other technique has been able to rival throughput rates and technical feasibility of optical techniques. But the ingenuity of the industry, to say nothing of the vast sums it absorbs, has risen to the challenge in the past, even amidst claims that it is not physically possible. And it seems likely that it will do so again.

**Dr Gordon Moore, chairman emeritus of Intel Corporation, is the originator of the Moore's law, named after him in 1965. Essentially, the law implies that computer power per dollar doubles every 18 months.*

SUPPLIER PROFILE: INTEL • By Louise Kehoe in San Francisco

A Silicon Valley powerhouse

With the largest chipmakers in Japan and Korea now struggling with economic turmoil, there are few companies that could seriously challenge Intel's dominant role in the world's semiconductor industry

Intel is in a league of its own. The world's largest chipmaker with a market value of more than $134bn, the Silicon Valley powerhouse produces most of the microprocessors used by the global personal computer industry.

The huge scale of Intel's operations dwarf those of most semiconductor rivals. The company ended 1997 with annual sales of $25.1bn, up from $20.8bn in 1996. With gross profit margins of close to 60 per cent, the company generates cash at a rate far exceeding that of any of its competitors.

This enables Intel to spend heavily on research and development as well as on new plants and equipment. This year, for example, Intel has a research and development budget of $2.8bn and plans to spend an additional $5bn on new production lines, three times that of any other semiconductor maker.

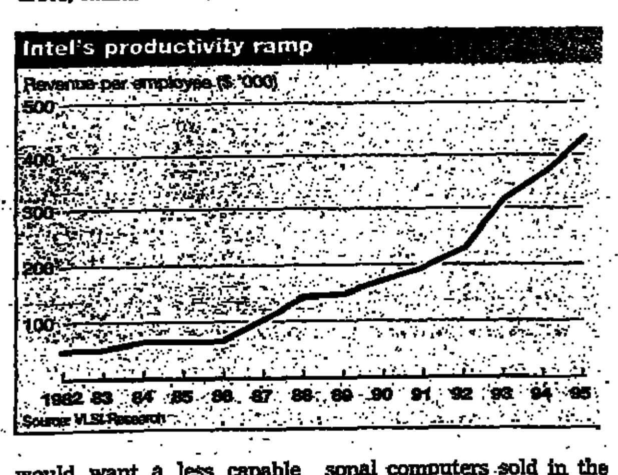
Given the dominant market share of Intel's Pentium microprocessors and the rapid pace at which the company is pushing forward with new technology developments, it may appear that the company's leadership is unassailable.

Yet changes in the personal computer market are creating new challenges for Intel that might trim its future growth. In particular, the emergence of the "basic PC", which sells in the US for under $1,000, has forced Intel to rethink its strategy. Until now, despite the complexity of its products, Intel's strategy has been simple. The company relentlessly improves upon the performance of its microprocessors so that the PC bought a year ago, or even six months ago, is quickly overshadowed by new models with faster engines.

With the introduction of each new generation of microprocessors, Intel would drop the prices of older versions so that PC prices remained quite stable while performance increased rapidly.

Microsoft and other software companies have aided Intel by developing ever more complex programs that require the latest PC hardware. Then along came the "basic PC" – typically based on a less powerful microprocessor from one of Intel's rivals. At first, Intel dismissed the significance of this new competition. "Who would want a less capable PC?" Intel asked, rhetorically. But the price was right and millions of buyers flocked to purchase the bargain PCs. Last year an estimated 25 per cent of personal computers sold in the US were in the under-$1,000 price category. The growth of this new market segment caught Intel by surprise, forcing the company to reassess the situation. Intel could offer its older microprocessors for use in these PCs, but that would put a dent in the company's vaunted profit margins. Instead, the company recently announced plans to develop microprocessors specifically designed for use in lower-priced PCs.

Intel has realigned its product groups to reflect a new strategy to 'embrace all segments' of the computer market, says Andrew Grove, chairman and chief executive



In November, Intel realigned its product groups to reflect the new strategy. Intel would "embrace all segments" of the computer market, said Andrew Grove, chairman and chief executive. By mid-year it plans to offer a version of its latest Pentium II microprocessor for low end PCs. The company will shave the cost of its highest performance microprocessors by taking out costly memory chips that accompany the current version. This will put the Pentium II in the same price range as slower chips from competitors.

Intel is also developing new "chip sets" – devices that work with the microprocessor – that further reduce costs by squeezing the functions of a PC into fewer chips.

Another cost-reducing trick up Intel's sleeve is to switch functions currently performed by chips into software that can be run on the microprocessor. While this increases the workload on the central processor, it means that even cheap PCs will need Intel's high performance microprocessors.

Even as Intel shifts gears to address the "basic PC" market, the company is also aiming to ensure that its chips are used in a new generation of television set-top boxes. These units, which are expected to sell for about $200-$300, will enable cable TV viewers to receive digital television pictures and internet services and they represent a potentially huge new market.

While lower-cost PCs and set-top boxes may boost Intel's sales, analysts predict that the company's profit margins will decline as it moves into these very cost-sensitive markets.

However, Intel plans to compensate for this shift by expanding its sales of very high performance chips with much fatter profit margins.

Already, Intel's Pentium II chips are being used in computer workstations and in multi-processor servers. In the workstation market, computers based on Intel chips and running Microsoft's Windows NT operating system are displacing those with proprietary technologies and the Unix operating system.

Intel has also made significant inroads in the server market. Last year, the majority of servers selling for under $25,000 were powered by Intel microprocessors.

In 1999, Intel will launch a new generation of microprocessors, code-named Merced, that will be aimed at higher end servers. Hewlett-Packard, the second largest US computer company, is collaborating with Intel in the development of Merced and plans to base its future products on the Intel chips.

Several other computer manufacturers, including Digital Equipment, also see Merced playing an important role in their future products.

By 2001, Merced will enable Intel to achieve a 41 per cent share of the market for microprocessors used in high end computers, analysts at International Data Corporation, a market research group, predict.

This would establish Intel chips as the dominant standard for servers and make Intel the top "engine builder" for the entire computer industry; a role that no other chipmaker can even aspire to.

With the largest chipmakers in Japan and Korea struggling with economic turmoil, there are few companies that could seriously challenge Intel's role. Even if another chipmaker came up with a better microprocessor design, none has the production capacity to match Intel.

However, Intel's growing dominance in the microprocessor market could make it more vulnerable to antitrust challenges, such as those currently facing Microsoft. Already, Intel is under investigation by the Federal Trade Commission, although it appears unlikely that the company will be charged with any wrongdoing.

Still, to achieve its "Intel inside everything" goal, Intel must produce a flawless Merced, with none of the bugs that plagued its original Pentium chips. The company may also have to weather a year or so of slimmer profits as it addresses the immediate need for lower-priced chips to service the "basic PC" and TV set-top box markets before Merced profits emerge.

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THE ASIAN DOWNTURN • By Michiyo Nakamoto in Tokyo

Nervous year ahead for Japanese producers

For most of Japan's semiconductor manufacturers, which depend heavily on memory chips for profits, the impact of the market downturn has been serious

When Mitsubishi Electric announced that it would halt fabrication of 4-megabit dynamic random access memory chips in the US, the news highlighted the difficulties Japanese semiconductor makers face amid the downturn in the market.

For a company belonging to the powerful Mitsubishi group, and one that prides itself as one of Japan's five leading semiconductor makers the decision to close the 4-megabit line would have been a painful one.

But the situation in the semiconductor memory chip market has become such that only the strongest can survive. Analysts note that Mitsubishi's decision was inevitable, given that the company does not have the economies of scale to compete with the likes of NEC and Toshiba.

With prices of D-Rams down sharply over the past few years and demand from their leading customers also slowing, Mitsubishi is not alone in feeling the heat.

The price of 16-bit megabit D-Rams, for example, has plunged about 60 per cent in the past 12 months. For most of Japan's semiconductor manufacturers, which depend heavily on memory chips for profits, the impact of the market downturn has been devastating. PC shipments in Japan fell nearly 8 per cent in the first half of this year, affecting demand for semiconductors.

In this environment, all of the top five semiconductor manufacturers, with the sole exception of NEC, are expected to post losses in their semiconductor businesses this year for the second year running.

The total recorded losses of Japan's five largest semiconductor manufacturers are estimated to reach Y29bn, according to Noriko Oki, industry analyst at Morgan Stanley Dean Witter in Tokyo. If an accounting change at Mitsubishi Electric is not included, the losses would be as much as Y50bn to Y55bn, she notes.

Mitsubishi Electric admits that its losses could be larger than the forecast consolidated net loss of Y10bn for the year. Analysts note that other companies are likely to come out with revisions as the year-end approaches.

In a bid to ameliorate the impact of cyclical sharp price declines in the D-Ram market and cut their losses, companies are racing ahead to develop more advanced products.

After efforts to differentiate themselves from competitors in South Korea and Taiwan by shifting to 16-megabit technology proved futile, Japanese semiconductor makers have been rapidly expanding output of more advanced 64-megabit chips.

In the production of 64-megabit chips, the leading Japanese companies have been able to jump ahead of other, so-called second-tier companies, notes Yoshiharu Izumi, industry analyst at UBS Securities in Japan. "In 64-megabit D-Rams and other advanced products, Japanese companies have taken the lead and the gap is still wide," he says.

Meanwhile, in an on-going programme to reduce their dependence on memory chips, which still account for a sizeable proportion of their profits, Japanese companies are beefing up their non-memory operations.

NEC's expected ability to buck the trend this year and report a profit in its semiconductor business, rests on its lower reliance on memory chips, notes Mr Izumi. "The difference between companies that will be able to make a profit and those that will make a loss depends on whether or not they make profits in non-memory products," he points out.

NEC, which is the second largest semiconductor producer in the world, after Intel of the US, has profitable businesses in non-memory products such as analog and discrete as well as memory-embedded processors used in PC peripherals, video games and mobile phones.

In its bid to expand its non-memory businesses, NEC recently agreed a wide-ranging tie-up with Philips, the Dutch company, to develop microprocessor used in consumer and communications applications. The market is expected to grow on the back of the increasing sophistication of consumer products and communications equipment, says NEC, which has a leading 40 per cent share of the combined 32-bit and 64-bit Reduced Instruction Set Computer (Risc) processor market, according to industry estimates.

Hitachi has also linked up with SGS-Thomson Microelectronics in the microprocessor field where it claims its SuperH architecture is the market leader in the 32-bit Risc market.

The market for such products is likely to grow from about 20 per cent of the leading Japanese companies' revenues from semiconductors to more than 50 per cent within 3 years or so, Mr Izumi believes. In the meantime, however, until the D-Ram market picks up, the Japanese industry is likely to suffer a nervous year ahead. With Korean companies expected to cut back on investment due to the impact of their currency crisis, analysts believe supply will tighten again to support prices. But it will take about a year for the impact of Korean cut-backs to be felt. As a result, Japanese companies are, on the whole, unlikely to be able to make profits on semiconductors in the next financial year beginning April, Mr Izumi believes. At best, with the help of more stable prices, they will be able to cut back their losses, he says.

Given the difficulties they face in their main memory market, it is not surprising that Japanese companies have become more eager to try to wrest what profits they can from royalty payments.

Just as US companies, most notably Texas Instruments, took many a Japanese semiconductor company to court over alleged patent infringement, a growing number of Japanese companies are showing a greater willingness to take legal action against those they believe have infringed their royalty rights.

NEC has taken Hyundai Electronics to court in the US over alleged infringement of its D-Ram manufacturing technology patents. Mitsubishi Electric and Fujitsu, meanwhile, have taken legal action against Samsung, which they claim infringed their patents related to memory products.

Samsung of Korea offers chip foundry facilities to 'fab-less' design houses with no internal production capabilities

TAIWAN • By Laura Tyson in Taipei

Hub for chip foundries

The growth in Taiwan's chip testing and packaging market is expected to outpace the foundry sector this year

The growing trend of outsourcing in the microchip industry is benefitting Taiwanese chip-makers despite fears of competition from neighbouring countries troubled by the Asian financial crisis.

Taiwan's strength lies in foundry chip-making, those chip plants – or 'fabs' in industry parlance – that produce integrated circuits according to the blueprints provided by 'fab-less' design houses that have no internal manufacturing capability.

With nearly a 45 per cent combined market share, Taiwan is now the world's leading location for dedicated foundry chip manufacturing. An industry pioneer, Taiwan Semiconductor Manufacturing, best-known as TSMC, leads the way with a 24 per cent forecast for world market share this year. And upstart United Microelectronics (UMC) is not far behind with a 20 per cent share, according to estimates by the securities house, BZW-CSFB.

Taiwan's foundry sector was quite strong last year and should do well this year, too, although orders from US design houses have slowed somewhat due to uncertainty over Asia's financial meltdown, says Lin Chi-tung, an electronics analyst at SBC Warburg.

The crisis has only lightly buffeted Taiwan but caution is prevailing as concerns over the impact on the US market grow. Nonetheless, TSMC is still running at full capacity and UMC is at nearly full capacity. The impetus behind the spectacular success of Taiwan's foundry segment over the last decade is the rising costs – and inherent risks – of the chip industry.

The industry's leading integrated chip-makers – those that both design and manufacture chips, called integrated device manufacturers or IDMs – are finding the costs of investing in new plants needed to upgrade technology and remain competitive are increasingly prohibitive in views of the risks.

Until recently, the industry standard for a silicon wafer – the raw material for chips – was 8-inches in diameter. The cost to build such a fab was about US$1.3bn. Now the industry standard is 12-inch wafers, for which a new fab costs $3.5bn.

Due to the chip industry's punishing boom-and-bust cycles for which it is notorious, there is a big risk that during the 18 months needed to build a fab, market conditions may have changed, rendering the product – and the plant – obsolete. For this reason, IDMs such as Intel, Motorola and AMD, all US concerns, are increasingly reliant on outsourcing to Taiwanese chip-makers.

Outside of Taiwan, the only successful foundry is Singapore-based Chartered, with a 3-4 per cent market share. Standard's prices are lower but it cannot match the Taiwanese foundries in the crucial "yield" factor – the percentage of usable wafers.

Other chip-makers, such as Korea's Samsung, offer foundry services on a part-time basis. But because they need to produce their own chips, they cannot be relied upon to have production capacity to spare during peak periods. Thus, the fabless design houses prefer to turn to dedicated foundries such as TSMC and UMC despite the price premium, which has widened following the depreciation in the South Korean won.

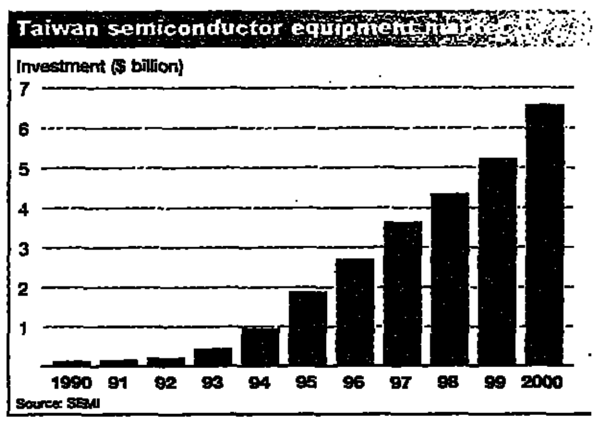
"TSMC and UMC can always get the best clients even if the market is in an over-supply situation," says Andrew Lu, an electronics analyst at BZW-CSFB.

These two companies will continue to be successful because the barriers to entry in chip-making are high. Not only is it a capital-intensive field, but the technical and quality standards are extremely rigourous. Extensive experience in running the fab is needed to win the necessary customer-base and a reputation for quality. Taiwan's wafer packaging and testing industry – known as the "back-end" part of the chip business – is growing very fast. These companies take the silicon wafer, on which the chip circuitry has been implanted, cut it up into individual chips and package them.

This service is also benefitting from the outsourcing trend, and nowhere more so than in Taiwan, where it is helped by the growing foundry business. Unlike the chip-makers themselves, the business of the tester/packager is dependent only on volume, rather than on volatile swings in price due to supply and demand.

Growth in Taiwan's testing and packaging sector, whose biggest service providers are ASE and Siliconware, is expected to outpace growth in the foundry segment because the market share is still relatively low. Often, the IDMs outsource under a turn-key operation, in which the foundries and the packaging and testing company co-operate to produce the final product.

Taiwan semiconductor equipment



☐ Taiwan's production of D-Ram chips: see page 7

EUROPEAN CHIP MANUFACTURERS • By Paul Taylor

A remarkable turnaround

Semiconductor sales in Europe are projected to grow to $33.5bn this year

In the early 1990s, most semiconductor industry watchers were ready to write off the indigenous European industry. Europe's leading semiconductor manufacturers were loosing money and seemed destined to slip ever further behind their US and far eastern rivals in terms of both technology and competitiveness.

But over the past five years there has been a remarkable turnaround – "the European industry has been revitalised," says Ulrich Schumacher, chief executive of Siemens Semiconductors. "We have closed the gap in terms of technology. We now can produce at as low cost as the Koreans can."

Walter Roessger, vice president of Semiconductors Equipment and Markets International (Semi) in charge of the trade association's European operations, is somewhat more cautious, but he agrees "there is more light in the tunnel in Europe."

This more positive outlook is also reflected in the performance of Europe's semiconductor equipment manufactures which include companies such as Netherlands-based ASM Lithography, a leading producer of the photolithographic equipment used by semiconductor manufacturers.

Although Europe slipped behind the US, Japan and the Asia pacific region in terms of its share of the global semiconductor market last year, according to the Electronic Times Global Semiconductor Market Report, year-on-year sales continued to grow.

Europe accounted for $28.6bn or 20.1 per cent of the $142bn world market last year, according to the report. Semiconductor sales in Europe are projected to grow to $33.5bn this year and $47.9bn in 2000.

Roland Andersson, National Semiconductor's general manager for Europe, says the European market for semiconductors has been driven by mobile communications – both wireless handsets and network infrastructure – and the need for higher bandwidth and throughput. "PC sales have also been strong in Europe and we believe this will continue," he says.

The need to be close to customers has encouraged leading semiconductor manufacturers and service companies to site both manufacturing and research and development activities in Europe and in Britain, in particular.

Aside from a wave of inward investment by both US and Asian/Pacific semiconductor groups including Intel, Motorola, Texas Instruments, Fujitsu and Hitachi, Cadence, the semiconductor design and tools group, has announced plans for a new collaborative research and development center to focus on 'system-on-a-chip' products in Scotland.

"The market for both design services and tools in Europe is very robust," says Jack Hardy, Cadence's new chief executive. Scotland's streamlined legal system and the relative ease of negotiating the type of licensing deals which system-on-a-chip products are expected to require, were important factors in deciding to site the facility there, said Mr Harding.

"At the end of the day, our customers just want to get their products to market, they don't care if its developed in San Jose or Scotland," he said.

"Despite the market concerns (reflecting economic problems in Asia), the European semiconductor companies remain positive on the long-term outlook for the industry and are focusing on new product developments and partnerships," noted Morgan Stanley Dean Witter analysts, recently.

For Philips and SGS-Thomson, two of Europe's leading semiconductor manufacturers with estimated chip sales last year of $4.28bn and $4.7bn respectively, the analysts note that the focus on new products appears to be on multimedia and digital consumer applications such as set-top boxes. This is highlighted by Philips' recently announced co-development partnership with Japan's NEC, under which the two companies will develop integrated chips mainly for consumer applications.

> **Producers are confident about the long-term outlook**

Separately SGS-Thomson – the Franco-Italian chip maker which has staged a dramatic turnaround under Pasquale Pistorio, chief executive – announced an agreement in December with Hitachi to jointly develop integrated semiconductors for the consumer electronics market.

In both cases, the Japanese partners will contribute their 64-bit processor core technology while, n the case of the SGS-Thomson partnership, the Europear company will provide its know-how from its strength in the micro-controllers used in hard disk drives, set-top boxes and engine management.

"In the light of these partnerships, the competitive landscape is changing," say the analysts. "It seems like the D-Ram manufacturers in Asia are trying to broaden out into new areas partly through these types of partnerships.

"SGS-Thomson still believes it has considerable advantages over the competition especially as the industry moves to more systems on a chip solutions. Similarly, Philips is focusing more on integrated chip solutions and expects to leverage its strength in consumer applications such as digital TV."

Meanwhile, Siemens, the other main European semiconductor manufacturer and a leader in areas such as telecom chips and smart cards, has been investing heavily and building its own string of partnerships with Toshiba, International Business Machines and Motorola – partnerships which Mr Schumacher says indicate that the group, "is now on a par with the leaders in Dram production and getting to the same point in terms of logic."

Last year, the group, which had estimated chip sales of $3.3bn last year, according to VLSI Research, spent about $1.73bn on

Continued on facing page

PRODUCER PROFILE: NATIONAL SEMICONDUCTOR • By Geoffrey Wheelwright

'Huge potential' of Cyrix deal

Now that National Semiconductor has acquired Cyrix, the PC chip-maker, the company has bold plans to 'put a whole PC on a chip'

Brian Halla appears to be a happy man these days. The 51-year-old chairman of the board, president and chief executive officer of National Semiconductor Corporation believes that he is one step ahead of the competition after pulling off a series of big acquisitions over the past 18 months.

Mr Halla says that, as a result of these acquisitions, his company, which enjoyed revenues of $2.5bn last year, is now better able to take full advantage of what he suggests will be a vast market for computer processors that offer a complete "system on a chip".

Particularly vital to his strategy is National Semiconductor's acquisition last year of the personal computer chip-maker, Cyrix Corporation. This purchase has given National Semiconductor a strong chance to better compete against Mr Halla's former employer and current arch-rival, Intel Corporation.

The latest evidence of this improved competitive position came in the middle of last month when the company announced that it had successfully produced Cyrix 6x86MX processors on 0.25 micron process technology at a pilot manufacturing facility in Santa Clara, California. Simply put, it means that National Semiconductor is now positioned to begin manufacturing 'state of the art' Intel-compatible computer processors this summer which, it says, will offer performance comparable to Intel's Pentium II flagship product.

While Cyrix has been producing Intel-compatible chips for years, it has always been hampered by the fact that it did not own its own chip manufacturing plants. This limited the speed with which new processors could be brought to market, as Cyrix needed to book capacity at the chip "foundries" of other semiconductor makers, and it also limited to the amount of proprietary design that could be carried out, since Cyrix had to design products it was sure other foundries could manufacture on its behalf.

Now that Cyrix is owned by National Semiconductor, which can provide it with "home-grown" manufacturing capacity to complement existing foundry agreements with key producers such as IBM Microelectronics, a much more aggressive stance on both performance and 'time-to-market' can be taken by the company.

National says it expects to continue its foundry agreement with IBM Microelectronics, which is currently making this Cyrix product. In addition, the company says it also has agreements with foundries in Asia to make 6x86MX chips. The company suggests that available capacity for the Cyrix processor is expected to be well in excess of 10m units in 1998.

And by using this 0.25 micron design, the company says it has achieved a big breakthrough over previous technologies, reducing the chip size from 150 sq. mm to 88 sq mm. (A micron is about 1/25,000th of an inch, making the circuits on this design about 200 times smaller than the width of a human hair).

Smaller 'line widths' on the circuits should allow National Semiconductor to increase revenues by squeezing more chips on to every silicon wafer produced.

According to Mr Halla, even the company's Cyrix 6x86MX chip has given it a real edge in the market for low-cost personal computers. Recent industry figures suggest that about 40 per cent of the desktop PCs sold in the US in the final quarter were in the under-$1,000 price category – yielding a growing market opportunity for Mr Halla.

"The architectural design, compact size, and low power consumption of the 6x86MX chip make it ideal for the rapidly-growing sub-$1,000 and $1,500 mid-range desktop PC marketplaces," he says. The longer-term opportunity is for devices that go well beyond today's standard processors and include everything from sound functions to sound to optimisation for playing downloaded videos, he suggests.

Many of these functions are already included in the Cyrix processors that have been quietly seizing market share from Intel in the under-$1,000 home and small business market used by market leaders such as IBM and Compaq in some of their latest systems.

He predicts that in the near future this "system on a chip" will be in huge demand as a vital component of a new range of "smart appliances" – the market for which he suggests might be at least as big at today's desktop PC business.

The Cyrix acquisition was a key part of trying to make that dream real and, from the time the deal was announced last July to when it received final approval four months later, Mr Halla was worried that "someone else would see the huge potential offered by Cyrix and scupper the deal with a better offer".

He adds: "Timing was so perfect that I was so nervous right up until the deal closed that someone would try and steal the deal out from under us," suggesting that arch-rival Intel missed the boat in not preparing for the low-cost computer boom. "Intel got caught blindsided by the sub-$1,000 PC."

Now, he says, the challenge is to make the most of its new resources to stay ahead of the competition. "Our goal at National is to put a whole PC on a chip," Mr Halla adds, explaining that he is "very big on setting goals for both himself and his staff".

He wants everyone at National to know and understand exactly where the company is headed. "At my first staff meeting, I said I wanted to be able to call any employee at 2am and ask them what the three strategic imperatives were and what the strategy was," he says.

"There is no question in my mind now that every employee knows exactly what they are. I have to tell you I *haven't* asked that question at 2am ... but there are an awful lot of employees that are ready to be called at 2am."

Mr Halla's three strategic imperatives for the company are to use state-of-the-art process technology, achieve world class manufacturing, and a six-month 'time-to-market' methodology.

The goals are as much strategic aims for National as they are the product of lessons learned by Mr Halla before taking up his current post. He only joined the company in May 1996 after eight years with LSI Logic Corporation and, previous to that post, a number of years with National Semiconductor's nemesis, Intel.

In his first year at National, Mr Halla made big changes to the company in order to focus on his "system-on-a-chip" strategy – which was aimed at building on National's strength in analog and mixed-signal technologies.

He also worked to revamp process technology and manufacturing and "fast-tracked" the opening of a new 8-inch wafer facility in South Portland, Maine which ran its first 0.35-micron wafers in May, 1997.

The plant is designed to move quickly to the next generation of 0.25-micron technology. As another part of the corporate revamp, Mr Halla orchestrated the sale of National's Fairchild businesses for $550m to help "increase focus on the value-added silicon strategy".

In his first year with National, he enjoyed four successive quarters of improvement in revenues, gross margin, and profitability – and even overcame a historical third-quarter downturn in sales.

As to challenges ahead, Mr Halla sounds ever-optimistic – particularly as he looks at the increasing number of devices likely to have a PC at their core. Whether it is an entertainment centre, an on-board system in a car, a set-top box being used with a television – or some kind of PC-based device that has not yet been invented – Mr Halla believes his "system on a chip" will be the processing engine that drives it.

Man at the top at National Semiconductor

☐ Brian Halla, 51, chairman, president and chief executive. Before joining National last May, he was executive vice president of the product group at LSI Logic, responsible for the company's Asic business, plus its portfolio for selected vertical markets, including networking, telecoms, digital video and computer system logic.

☐ Prior to joining LSI Logic, he was director of marketing for the Microcomputer Group at Intel. Mr Halla holds a BSEE degree from the University of Nebraska.

Halla – 'big on setting goals for himself and his staff'

COMPUTER INDUSTRY APPLICATIONS • By Geoffrey Wheelwright

Hitachi makes headway in the handheld market

Intel's aggressive competitors seek new ways to make inroads into the chip market on the basis of price and speed

While everyone knows that the personal computer industry is one of the largest users of semiconductors, it is nevertheless surprising to discover the sheer variety of chip companies supplying the PC industry.

For many years, the commonly accepted wisdom was that the computer chip industry was a fairly straightforward business: Intel dominated on the processor side while a few Far Eastern and American companies accounted for much of the Random Access Memory (Ram) supply, together with a handful of specialist firms which supplied both digital signal processors (DSPs) and custom chips.

However, over the past couple of years, that broadly accurate picture has started to change. While Intel still dominates in the PC processor business, there are sectors of even *that* market where competitors have begun to make inroads on the basis of price competitiveness, speed or voltage consumption.

A key area in this regard has been the handheld computer market, where the market leader, Intel, lags behind a number of other more aggressive players. The semiconductor division of Japanese electronics giant Hitachi, for example, has enjoyed considerable success in selling its SH-3 processor for use in handheld computers, based on the Microsoft Windows CE operating system.

A number of new systems based on the latest Windows CE 2.0 version of the operating system were announced at the Fall Comdex 97 trade show in Las Vegas, late last year. Many of them – including models from Casio, Compaq, Hewlett-Packard and, of course, Hitachi itself – used the Hitachi "reduced instruction set" (Risc) processor.

In fact, Intel's low-power versions of its desktop processors were amongst the latest entrants into the Windows CE specification. Meanwhile, many computer makers appear to relish the opportunity to offer Windows-based handheld computers that do not bear the "Intel Inside" logo.

Casio's Cassiopeia newly-introduced A-20 Windows CE 2.0-based handheld system, announced at the trade show, was able to boost performance by using the newer, faster 80 Mhz version of the Hitachi SH-3 CPU. And that power will increasingly be in demand as hand held systems are expected to be able to cope with everything – from the sending of e-mail messages to World Wide web browsing to the display of marketing presentations.

Still, there is absolutely no indication that Intel is losing any sleep – or money – over this trend. A report last month from US market research firm Dataquest suggested that, if anything, Intel was the biggest engine firing the growth of the PC industry's semiconductor use.

Although the company was still making its final tally of 1997 sales, Dataquest's worldwide semiconductor research operations director Rob Bohn estimated that the worldwide semiconductor market will reach $150bn for 1997. Intel remained the market leader as it enjoyed semiconductor revenue in excess of $21bn and growth of 18 per cent.

"Led by microprocessors, Intel grew its semiconductor revenue by nearly 20 per cent during the year, which is strong performance in face of major inventory adjustments by PC original equipment manufacturers," he says.

Strong demand

Another big area of PC semiconductor demand lies in Random Access Memory (Ram) chips.

As users of the Microsoft Windows operating system have upgraded to Windows 95 and Windows NT over the past year or two, demand for add-on Ram has been strong.

Supply and competition, however, has been so plentiful that Ram prices have remained low compared to what they were a couple of years ago.

Impact

The downturn in some Asian economies also had an impact in this area. "The weakening of currencies such as the Korean won and Japanese yen against the US dollar ... exacerbated low-memory IC pricing," suggested Mr Bohn. "This meant another year of revenue decline or no growth for a host of memory-dependent companies, as measured in dollars."

This was particularly true for companies such as Hitachi, which Mr Bohn says declined in semiconductor revenues by almost 20 per cent in 1997. Hitachi, in spite of winning new business such as the supply of processors in many new makes of Windows CE handheld computers, also saw a drop in its Dataquest semiconductor 'top 10' rating from world's fourth largest to world's sixth largest semiconductor maker.

There has also been the issue of maintaining the right kind of price relationship between computer upgrades and computer replacement. Prices of new and more powerful desktop computers have continued to fall – dropping to an entry level of around $1,000 (including computer display) at the end of 1997.

Thus, the idea of spending more than $500 to upgrade Ram (or anything else) on an old system has been less attractive to consumers.

Still, demand for Ram by manufacturers remains healthy as the base level of Ram needed in basic systems shifts from 16Mb in most 1997 machines to 32Mb in most of the new computers being released in 1998.

Thus, Ram has been an "off the shelf" semiconductor commodity that personal computer manufacturers and, to a far less extent, consumers have been able to buy from a variety of Ram chipmakers. Meanwhile, the market for custom chip sets (which add extra features and capabilities to desktop and notebook PCs) has moved in just the opposite direction. There are a few specialist players in some fairly 'niche' markets that enjoy fairly high market share.

Take, for example, the success of Canadian graphics card company, ATI Technologies: it not only produces some of the most popular add-on graphics cards in the personal computer industry, but also enjoys a healthy business selling custom chips and video boards for PC manufacturers to include in their computers.

Founded in 1985, ATI employs more than 900 staff at its headquarters in Thornhill, Ontario, with offices in the US, Germany, France, the UK, Ireland and Japan.

Milestone

Late last year, the company reached something of a corporate milestone when it announced that October, 1997, marked the first month in which it had shipped a million graphics accelerator and multimedia boards to computer manufacturers, system integrators, value added resellers and retail customers. It followed this with financial results in November showing that ATI enjoyed its third consecutive year of greater than 70 per cent earnings growth.

ATI's graphics accelerator boards, multimedia cards and TV tuner products are now featured in the systems of a number of leading manufacturers. Customers include Compaq Computer in the Presario line; Sony in its multimedia VAIO systems; Toshiba in the recently discontinued Equium line of business computers; AST in its Bravo corporate systems; Gateway Computers in its business systems; and Sun Microsystems in its corporate products. In Europe and the Far East, ATI boards can be found in systems from Viglen and Acer.

AUTOMOTIVE APPLICATIONS • By Geoffrey Nairn

Vehicles are becoming increasingly electronic

Automotive chips have to withstand tough conditions

The automotive industry has emerged as one of the most promising new markets for semiconductor suppliers as carmakers use chips in increasing numbers to build complex electronic systems and sophisticated navigation and entertainment systems.

"The automotive sector is turning to electronics in a very big way," says James Eastlake, vice president of European semiconductor research at Dataquest, the industry analyst.

The value of the electronics in a new car is today greater than its steel content and growing at around 20 per cent a year as carmakers use electronics to add features or conform to new safety or pollution legislation.

Many functions traditionally performed by mechanical or electrical systems are now done by electronics. Analysts predict high-value cars will soon use more than a dozen chips for applications such as active suspension, engine control and ABS brakes. Ford estimates its Taurus model contains more computing power than the Apollo spacecraft that went to the moon.

Unlike the powerful 32-bit microprocessors used in computers, electronic systems in cars tend to use cheaper 8-bit "microcontrollers" which combine a microprocessor and memory on the same chip. One European carmaker plans to use 10 microcontrollers in its 1999 car models. They will control door locks and windows, open and close the sunroof, remember the best position for the front seats, monitor the tail lights, and control the CD player and radio.

European chipmaker SGS-Thomson receives 10 per cent of its revenues from the automotive sector. Half of the cars in Europe use the company's electronic ignition components and it has a growing range of custom chips designed for automotive applications.

Unlike the digital chips used in computers, semiconductors for automotive use are typically "hybrid" components – meaning they handle digital and analogue signals on the same chip.

SGS-Thomson last year unveiled a hybrid chip designed to control car doors. It combines an 8-bit microcontroller with on-chip analogue power circuitry to handle the high-power analogue signals needed to drive the motor that activates the door lock. Because of its onboard microcontroller, the chip can be fine-tuned simply by changing the software, allowing carmakers to customise the behaviour of the locking mechanism.

Automotive chips have to be designed to withstand tough environments. Operating temperatures can range from minus 40 deg C in a Scandinavian winter to 55 deg C in the desert, while vibrations and sharp fluctuations in a car's electrical supply can easily damage sensitive electronics.

"Conditions are far more harsh than in other microelectronics applications," says Horst Nasko, chairman of Medea, a pan-European chip research programme that includes several automotive projects, one of which focuses specifically on making chips robust enough to withstand the harsh vehicle environment.

Reliability is important in automotive electronics because even minor malfunctions can have severe consequences if the driver gets stranded on a lonely country road. SGS-Thomson claims the reliability of automotive systems can be increased and costs reduced by using "smarter" hybrid chips, such as its door-lock actuator, to replace the several components traditionally required.

The company says 60 per cent of the cost of an automotive system is due to the connectors, boards and passive components, yet these cause most failures. By designing systems using fewer but smarter chips, weak spots and costs can be reduced, SGS-Thomson believes. Chips are also making big inroads inside cabins as carmakers seek to provide a more enjoyable driving experience with sophisticated in-car entertainment systems and electronic instruments.

The German automotive supplier, Mannesmann VDO, has developed a futuristic cockpit electronics system that departs from the conventional dashboard design. It is based around a central computer that distributes data and commands to the instruments and controls via a local 'bus' system.

Global positioning by satellite (GPS) could be the next big automotive chip market. Dataquest says the worldwide market for semiconductors used in GPS systems will grow rapidly from $364m in 1997 to nearly $1.7bn by 2001.

GPS technology can be used in many applications in the automotive area including emergency calling, vehicle tracking, fleet management and automatic vehicle locator systems. Carmaker BMW offers GPS as a standard option on its latest Series 5 range. A colour screen built into the dashboard displays a digital map of the car's position while a voice synthesiser reads directions.

When the car is stationary, the screen can also be used as a TV. The ultimate in-car entertainment is undoubtedly a personal computer – and the IT industry has realised the potential of this new market. At last month's Consumer Electronics Show in Las Vegas, Intel showed a Ford Expedition car loaded with a prototype of its Connected Car PC technology.

The system provides drivers with voice-activated GPS navigation and a cellular phone, while passengers can surf the Internet, view DVD videos or play CD-Rom games. The product is based on an Intel Pentium-based PC squeezed into a box small enough to fit in a dashboard. The driver sees a small car radio-type display while passengers in the back have a larger LCD screen and a wireless keyboard.

Mike Iannitti, Intel marketing manager, believes the system will appeal particularly to families as it can keep young children entertained on long car journeys. "People with kids have loved the concept," he says.

The Intel product can also be used for more serious applications. Salespeople can pick up their e-mail while on the road and the system could be programmed so that if the airbag inflates, the cellular phone automatically calls the emergency services and, using the GPS locator, give the car's position.

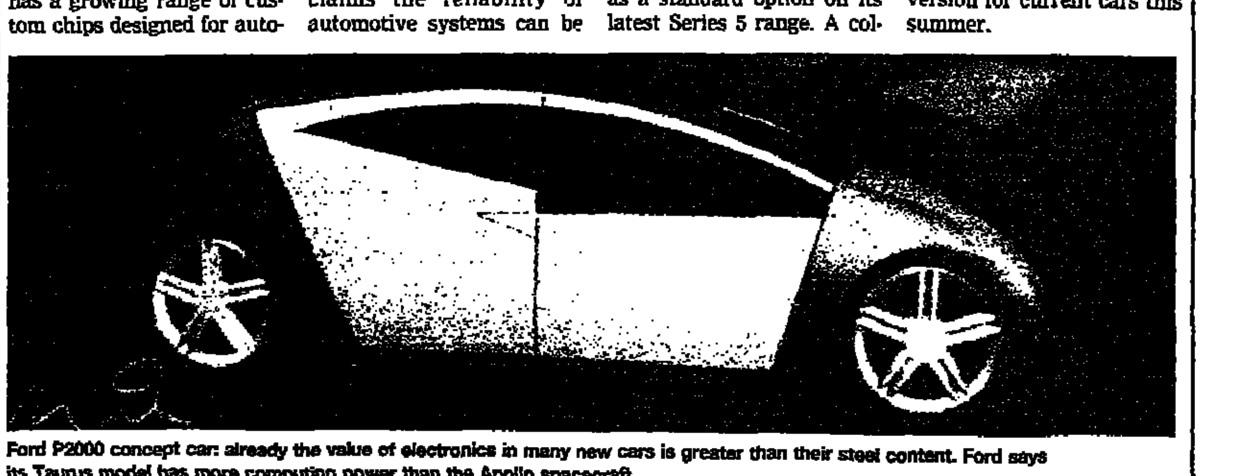
Microsoft showed a similar product, called Auto PC, designed around its Windows CE operating system. It claims a dozen manufacturers plan to use it in dashboard-mounted, voice-activated computers.

Visteon, the components arm of Ford, is working with Microsoft and Intel and hopes to be the first to incorporate the technology in a production vehicle, probably in 2000. It says it will offer a dealer-installed version for current cars this summer.

Chips in vehicles

Dollar growth of semiconductor content per vehicle worldwide

Source: Dataquest



Ford P2000 concept car: already the value of electronics in many new cars is greater than their steel content. Ford says its Taurus model has more computing power than the Apollo spacecraft

EUROPEAN CHIP PRODUCERS

Siemens in landmark agreement

From facing page

capital equipment, ranking the German company as the third biggest semiconductor equipment capital spenders after Intel and LG Semicon, according to IC Insights.

Some of that spending reflected work on Siemens' £1.1bn facility on north Tyneside in Britain to produce memory products and Asics, with the prospect of adding research and development operations.

Meanwhile, in a landmark agreement last month, Siemens announced plans to for a joint venture project in Dresden with Motorola of the US which will utilise the next generation of 300mm wafer sizes.

While the 'big three' European semiconductor companies have stolen most of the headlines over the past year, other companies among Europe's 20-strong band of chip-makers have also been scoring successes. Among them, Advanced Risc Machines, the Cambridge-based semiconductor design group spun off from Acorn in 1990, which lists Apple, Acorn, VLSI Technology and Nippon Investment and Finance among its investors, became profitable in 1993.

"Arm has been a tremendous success," says Pascal Langlois, vice president of VLSI Technology's European operations. Now the imminent arrival of digital satellite and digital terrestrial broadcasting promise a further boost for companies such as Arm. "What comes now is being more aggressive in Asia and elsewhere where European companies are weak," says Siemens' Mr Schumacher, who also argues forcefully that if Europe is to capitalise upon the rebirth of its semiconductor industry, national governments and the European Commission, in particular, need to accelerate their approvals procedures.

COMMUNICATIONS • By Joia Shillingford

Telecoms lifts European semiconductor market

World demand for chips used in telecoms is set to grow by 10 per cent a year over the next five years

Chips for telecommunication systems form the fastest-growing part of the European semiconductor industry. David Moorhouse, an analyst in Dataquest's European semiconductor group, says telecoms accounts for 50 per cent of new designs for application-specific integrated circuits (Asics) – custom-made chips.

Demand is also high for digital signal processors (DSPs), the chips used in cellular phones to compress voice while users are talking and decompress it while they are listening. DSPs are used in mobile phone network infrastructure (such as cellular base stations) as well.

Some types of flash memory chip used in computers are needed for telecoms applications, too. And chips are required for Integrated Services Digital Network (ISDN) adaptors, which benefits suppliers like National Semiconductor.

One of the newest chips is a neural network microchip developed jointly by BT's Martlesham research laboratory and Korea Telecom to simplify network management. The prototype Universally Reconstructable Artificial Neural Network chip comes into its own in applications where there are a large number of variables, such as switch configuration, radio channel allocation and other network control problems requiring rapid reconfiguration.

The total demand for chips used in telecommunications worldwide will run at 10 per cent a year over the next five years, predicts Dataquest. Higher growth rates than this – 15 per cent plus – have been seen over the past few years, but from a lower base.

Last year, 40m cellular handsets were produced as compared with 25m in 1996. Increases in handset volumes have put pressure on DSP prices and these have been falling at 20 to 30 per cent a year.

Digital signal processors

Key suppliers in the DSP market include Texas Instruments, Lucent Technologies' Microelectronics Group, Analog Devices and Motorola. These four US companies have the lion's share of the market, according to Mr Moorhouse.

"DSPs are a specialised technology and the main players have been in the business a long time," he says. "They have stuck with it over the last 10 years, making it hard for others to compete."

Custom-made chips

DSPs can be bought ready-made, whereas Asics are made to a company's specification. For example, Nokia might design an ASIC and arrange for a supplier such as Hitachi or LSI Logic to make it for them.

Other Asic-makers are US-based VLSI, Siemens of Germany, SGS-Thomson of France, NEC and Toshiba. In fact, Japanese companies – Hitachi, Toshiba and NEC – are presenting serious competition for US companies in the Asic market.

Asics account for the largest part of the market for telecommications' chips. They are used not just in the mobile phone industry but also in network hardware for local-area networks and wide-area networks and in smart (screen-based) phones.

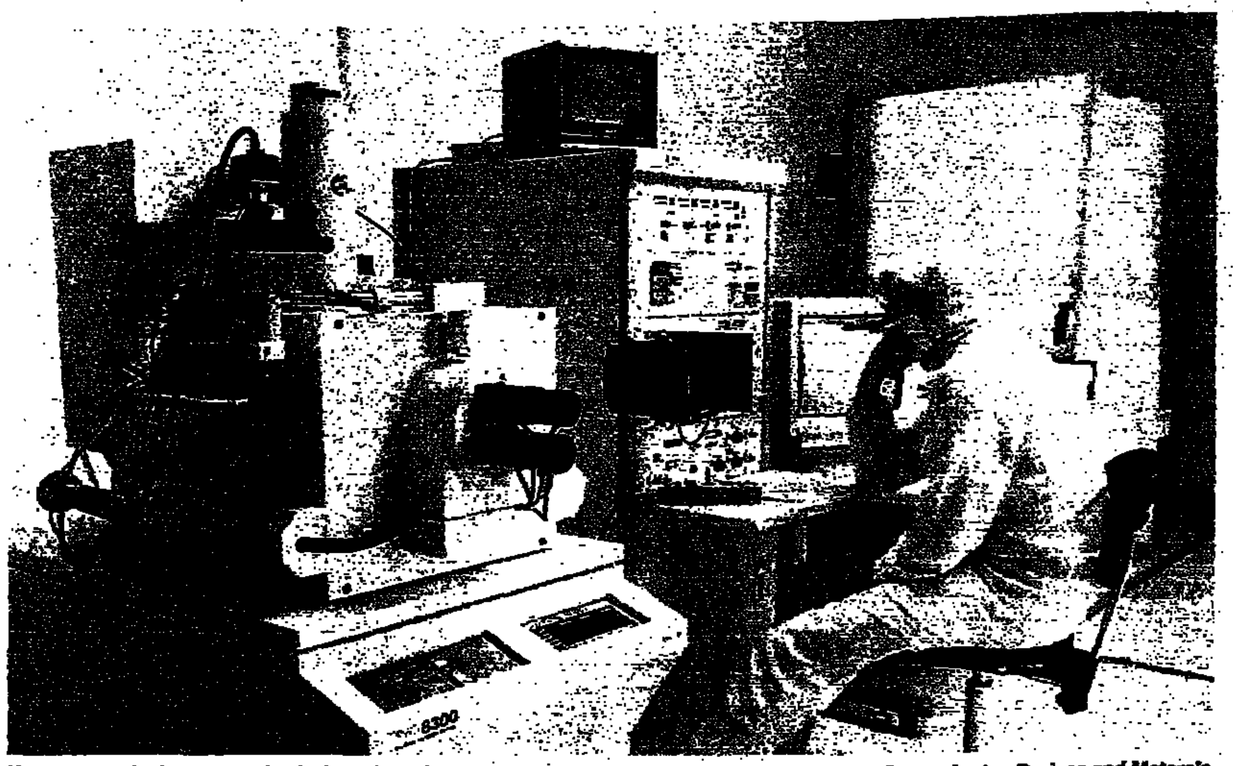
Companies use Asics either because there is no standard solution or because a standard chip would not give them the size of product or level of power consumption they are looking for.

However, Asics are very costly to develop and there is a risk that they will not work the first time. They require considerable engineering expertise and – because of the set up cost – they are only suitable for large production runs.

An Asic can cost $250,000 to develop, including the engineering time. So if only a 100 units are produced, the set up costs amortised over each one would cost $2,500 plus a charge for each actual chip of, say, $10. By contrast, the typical semiconductor content in a mobile phone costs $65-$70. Three years ago it was $250, but by the year 2000, Dataquest expects it to fall below $40.

Programmable logic

Fortunately, there is an alternative to totally flexible Asics or standard, low-cost DSPs. Companies wanting to produce custom-made chips in small volumes can use programmable logic devices, (PLDs). Per chip, these cost two to three times as much as an Asic of the same size. But they can be configured without using semiconductor manufacturing technology. Instead, it is possible to programme each 'gate' on the chip and for the PLD to store the configuration. PLDs do not give quite the flexibility of full-blown Asics but they are popular for use in networking technologies. A big plus is that suppliers can bring a PLD to market in six weeks, whereas an Asic could take six months to develop.



Key suppliers in the DSP market include Texas Instruments, Lucent Technologies' Microelectronics Group, Analog Devices and Motorola

Time-to-market is very important in the network arena, says Mr Moorhouse. "A lot of networking companies use programmable logic to get a product out quickly. They say to themselves: 'When the volume rises, we'll go over to Asics'. But in six months' time they may have upgraded to a new product so that they never get to the Asic stage."

According to Mr Moorhouse, the two top companies in the (PLD) field are Altera and Xilinx, both US companies. Lucent is also in this area and Philips is about to enter it.

Single-chip solution

Over time, the distinction between different types of chip is starting to disappear. For example, there are three or four chips in a cellular handset. But DSPs and Asics are starting to merge – it is now possible to obtain an Asic for a mobile phone handset with a DSP core built in.

These are not in mass production yet, but Mr Moorhouse says: "As we move towards next year, we will typically find Global System for Mobile (GSM) phones with a single chip in the baseband (radio). We can expect to see single chips from LSI Logic, VLSI, Texas Instruments and others in 1999."

The big drivers for single chips, he says, are to cut costs and lower power consumption.

Another trend in the telecommunications' chip market is towards "brain" companies selling intellectual property only. Companies such as the US-based DSP Group licence their designs for DSP cores to companies such as Motorola, NEC and Siemens, for inclusion in Asics.

Many of these companies are vertically integrated, so that they not only produce telecoms semiconductors for others but use them in their own telecoms products as well – thus, healthy demand for their own products will mean healthy demand for their semiconductors, too.

RISING DEMAND ON THE HOME FRONT • By Geoffrey Nairn

Consumer market sets the pace

Internet access is potentially much bigger than the desktop PC market. Many companies are working on low-cost information appliances to entice consumers

While the computer industry ponders moving to a new generation of 64-bit computers in the next decade, children are already familiar with this powerful technology – thanks to games machines such as the Nintendo 64 that use 64-bit processors. This is a vivid example of how the consumer market increasingly sets the pace in chip development.

Once, it was just TVs and radios that contained semiconductor devices, but the market has grown dramatically in recent years and even a humble food processor is today likely to contain a microprocessor.

The latest digital entertainment products, such as set-top boxes, DVD disk players and digital TVs, would not be feasible without the impressive advances that are continually being made in semiconductor technology. For example, the Japanese consumer electronics company Panasonic has developed a single-chip video decoder for digital TVs that performs the work of the three chips typically used in rival designs.

To move closer to advances in chip design, the Korean electronics manufacturer, Daewoo Electronics, has set up a design centre with European chipmaker, SGS-Thomson. The centre, based in Seoul, will be used to develop chips for the next generation of consumer products.

Soon-Hoon Bae, chairman and chief executive officer of Daewoo Electronics, believes such collaboration is essential as consumer electronics products become more sophisticated. SGS-Thomson's chip design expertise will be "crucial to develop state-of-the-art analogue and digital consumer products in the future," he says.

The example of the Nintendo 64 demonstrates just how much the consumer industry now depends on advanced microelectronics. The Nintendo's fast-moving 3-D images and high-quality sound have set a new standard in the games market, thanks to its 64-bit microprocessor and custom graphics coprocessor, both designed by the US semiconductor company, Mips.

The Nintendo 64 costs around $190 and its impressive performance is more commonly found in graphics workstations costing over ten times as much. Indeed, the microprocessor used in the Nintendo machine is an "embedded" version of a more expensive Mips microprocessor widely used in workstations.

The embedded version of the chip has a no-frills design tailored to reduce cost and power consumption. The Nintendo 64 and its arch-rival, the Sony PlayStation, both depend on processors from Mips, a division of Silicon Graphics.

"It's an area where we have been very successful," says Bert Zandhuis, European business manager at Mips. The company has scored several other design wins for its chips in the consumer sector. Mips does not manufacture its own processors but licenses the "core" design to other chipmakers, who enhance and package the chip to meet their own needs.

At last month's Consumer Electronics Show in Las Vegas, Philips unveiled its Nino handheld PC which uses a Philips processor based on a Mips design. The Nino, which costs from $399 to $499, uses the Windows CE operating system. The latter was designed by Microsoft specifically for battery-powered consumer devices, such as handheld computers, of which more than 500,000 have been shipped since the software was launched in October 1996.

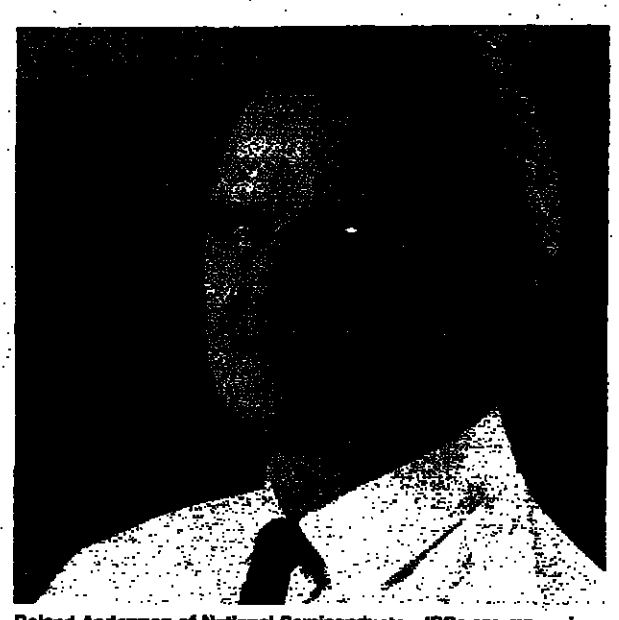
Mips is not the only semiconductor company with eyes on the consumer market. The UK company, Advanced Machines, has developed a rival processor design, StrongARM, also aimed at "embedding" in various consumer devices. Philips will use the Strong ARM chip, manufactured by Digital Semiconductor, in a new "screen phone" which provides access to the Internet, e-mail and voice mail.

StrongARM microprocessors are rapidly finding favour with leading vendors of consumer electronics products, says Leo Joseph, manager for internet appliance marketing at Digital Semiconductor.

The consumer market for Internet access is potentially much bigger than the desktop PC market and many companies are working on low-cost information appliances to entice consumers. National Semiconductor, a big US chipmaker, hopes to make its name in this new market. Last year, it acquired Cyrix, a maker of low-cost microprocessors, and Mediamatics, a provider of digital video compression technology. It hopes to combine their skills to make chip sets for low-cost PCs and information appliances – see profile of National Semiconductor, page 11.

"PCs are expensive but there is no reason why they should be," says Roland Andersson, National Semiconductor's European vice president. "We must integrate much more on the chip and make it much more affordable."

An example is the Cyrix MediaGX chip, a low-cost 64-bit microprocessor that integrates functions previously achieved by several chips. This high level of integration allows computer manufacturers to offer multimedia PCs at prices below $1,000 – the fastest growing PC sector.



Roland Anderrson of National Semiconductor: 'PCs are expensive but there is no reason why they should be'

The MediaGX chip costs about $114 and, during 1998, National hopes to see the technology used in the consumer market.

Mr Andersson says National Semiconductor is working with several customers on information appliances, such as a personal digital assistant with wireless communications.

Sun is another company with ambitions in the consumer sector. The combination of its Java programming language and special processors optimised to run Java is ideal for consumer applications, according to Dhaval Ajmera, director of marketing at Sun Microelectronics, the company's semiconductor division – see also the report on page three.

The company has licensed the core Java chip design, called PicoJava, to five chipmakers and plans to also offer its own chip, the MicroJava 701, during the second half of this year.

"The 701 is targeted at embedded Java-centric market segment such as network computers and internet TVs," says Mr Ajmera.

One of the drawbacks of the current PicoJava chip design is that the programs must be 100 per cent written in Java. However, many product developers may want to re-use or adapt existing programs written in older languages. For this reason, Sun Microelectronics will soon offer a second version of its PicoJava core design, called PicoJava II. This design produces a slightly bigger chip but has the advantage that it also runs programs written in C++, a language widely used for embedded software.

SMARTCARDS • By Joia Shillingford

Soon they will be everywhere

'Intelligent'smartcards may not revolutionise our lives, but they will make them more convenient

Smartcards will become ubiquitous, says the Ovum analyst, Mark Stevenson. "Take-up will be driven by large companies, then small companies will follow. Finally, consumers will want them," he predicts.

The small plastic cards with built-in intelligence on a chip could soon be in widespread use in London, where the Underground transport system plans to use them for ticketing in four years time.

Contactless barriers will be put in which 'tube' travellers can open by flashing their cards – this will increase the throughput of passengers, planners believe.

The cards are also expected to help London Underground reduce ticket fraud by £30m a year. This is because the cards are hard to copy and because they are easy to cancel if a customer reports them stolen. In addition, the cards will provide detailed information on tube usage, flow of passengers, and so on.

The UK government is also considering issuing smart cards to benefit claimants to reduce benefit fraud and provide more detailed information.

Smart finance

But smartcards will only really enter the mainstream when they are used in finance for credit and debit cards, says Mr Stevenson. The cards have been slow to catch on because the infrastructure of card readers needed is expensive to install and because even the cheapest cards cost around $3 to produce.

Yet card companies have the money and the incentive to adopt smart cards because of the large sums they lose every year in credit card fraud. It is difficult to break into a smartcard or duplicate it.

The cards can also be used for electronic cash schemes, such as UK-developed Mondex. Electronic cash has an attraction for retailers and banks because handling cash is costly. Cash handling costs UK banks £2bn a year, according to Ovum.

Telecoms companies are also keen on the idea of 'e-cash' because units of electronic money can be transferred from person to person, or from bank account to card over the phone.

In Hong Kong, Mondex cardholders can transfer money via phones or point-of-sale terminals to their cards (or from their cards to their bank accounts) without speaking to a human being. The HongKong and Shanghai Banking Corporation is using Syntellect voice response technology to carry out users' instructions automatically.

Electronic cash stored on smart cards could also be used for electronic trading over the Internet.

In the UK today, there are relatively few nationwide uses of smartcards, although they are used in BT phone cards; in Boots' retailing loyalty cards; and in Shell's loyalty scheme. In general, they are still being used for storing information rather than processing it.

Meanwhile, Frost & Sullivan, the market analysts, say smartcards are most widely used in Germany, due to the health insurance card market, with France the second-largest user.

In France, all phone cards are smartcards and credit cards including smartcards are available.

Europe leads the way in smartcard take up, followed by Asia/Australasia, then the US.

Last year Schlumberger of France, the market leader, produced 260msmartcards – Schlumberger, and its French rival GemPlus, have around 80 per cent of the smartcard market.

Mr Stevenson predicts that "in late 1998 or early 1999, there will be a 'small bang' in smartcard use, leading to a gradual adoption." But the rules of the game are changing and it is not yet clear who the winners in the smart card war will be.

Rival standards

So far, the smartcard market has been dominated by the companies making the smartcard hardware. In addition to Schlumberger and Gemplus, other suppliers include Hitachi, De La Rue, Bull CP8 and Toshiba.

Manufacturers have used their own proprietary software on the cards which has made them incompatible with technology from other smartcard companies. However, there is growing pressure for standardisation and two standards have emerged.

One uses Java software from Sun Microsystem's JavaSoft subsidiary. This is backed by the Java Card Forum (JCF), a consortium of smartcard makers – see report, right, on Java cards.

The other uses the Multos operating system invented by Mondex and controlled by the Maosco consortium, which Mondex, Motorola, Siemens, Hitachi, GemPlus, KeyCorp, MasterCard and Dai Nippon Printing have joined.

Cards based on Java Card 2.0 and Multos are expected to appear before June. "The availability of software standards could shift the balance of power away from the hardware manufacturers to software manufacturers," says Mr Stevenson. "Companies not currently in the smart card market could provide the applications software.

"Generic operating systems also open the market for other companies to market smart cards."

However, some analysts say it is not yet clear that the Java Card will win. They say the Java virtual machine – a software 'bubble' that insulates applications software from the manufacturer's own technology – is not that small and leaves little room on the card for applications.

They believe the Multos operating system backed by Mastercard is technically superior. Visa, meanwhile, is enthusiastic about theJava Card, which also has a following outside the smart card world – on the Internet.

Would-be users can only hope a winner emerges soon. Mr Stevenson believes that consumers will eventually start to want smart cards for two reasons:

□ First, as they become more versatile, a single smartcard will be able to replace a whole array of cards in the user's wallet. For example, London Underground could rent out space on its smart Travelcards to an electronic cash company, a theatre booking agency or other service suppliers.

□ Second, users will like the "instant gratification" of being able to load up with electronic cash without needing a cash machine. As Mr Stevenson says: "I live 15 minutes away from a cash machine – and it's very annoying to find I've only get 72 pence in my wallet when I want to go the pub.

"Smartcards won't revolutionise our lives," he adds, "but they will make them more convenient."

JAVA CARDS • By Joia Shillingford

Multi-purpose cards for thinner wallets

A pocketful of plastic cards could become a thing of the past

The use of standard software on smartcards is starting to boost take-up. The current frontrunner is Sun's Java software, which is already on some smartcards in commercial use. Its rival Multos, developed by Mondex, is still at the prototype stage (see report, left).

Here, we look at the reasons why Java is catching on – "Java has already irrevocably changed the smartcard world," according to Christian Goire, president of the Java Card Forum. Fabien Thiriet, Java Card marketing manager of Schlumberger in Europe, says there are two reasons why it is being adopted so enthusiastically.

□ First, for security: Java – Sun's language for developing small applications (or "applets") is a very safe language, which puts "firewalls" (protective barriers) between applications. Moreover, the smartcard industry is using the most secure subset of the Java language. It does not use some of the less-secure features that have caused consternation on the Internet in the past.

□ The second benefit of Java is that it can run on any chip. Smartcards – plastic cards with built-in intelligence on a chip – contain chips from different makers. In the past, this has made it difficult to develop new applications, because they had to be adapted for different chips.

"Now we can follow the philosophy of 'write-once, run anywhere'," says Mr Thiriet. Java runs inside its own bubble or 'virtual machine' and is not dependent on a specific type of hardware being used.

Java-based smartcards have been available for development since April 1997. Companies in France, Germany, Belgium, Scandinavia, Asia, South Africa and the US are using them to develop applications for loyalty schemes, access control, banking and mobile-phone SIM cards.

Less time to market

A big benefit of Java is reduced time to market – developing applications for a smart card can take 4-6 months, says Mr Thiriet. "Developing something of the same complexity in Java takes only two or three weeks."

Users of Java-based smartcards (Java cards) will also win benefits: for the first time, they will have multi-application smartcards. So wallets bulging with plastic cards could become a thing of the past.

Instead, users will be able to change the applications stored inside a card. If they want to use a new service, they will be able to download the new applet quickly. And when they want to stop using a service they will be able to delete it in a few seconds.

The first Java cards were used last year by companies such as Nokia and Mercedes-Benz. Mr Thiriet expects 2m to 3m cards to be sold in 1998. But he predicts that during the next century, 50m of the 100m smartcards sold each year will contain a Java virtual machine."

The work of the Java Card Forum (JCF) will give a boost to the market. It was founded by Schlumberger of the US and Gemplus early in 1997 and members include Bull CP8, De La Rue, and Japan's Toshiba and Hitachi.

With input from the JCF, JavaSoft, a division of Sun Microsystems, has released a new Java card applications programming interface (a set of rules for developers to follow). This became available in October, according to Tom Lebsack, Schlumberger's director of marketing for smartcards and systems in the US.

Products based on the new API 2.0 will be available before June. Lebsack says API 2.0 "takes the best of API 1.0 and moves it forward to handle financial (e.g.

Continued on facing page

KNOWLEDGE MANAGEMENT • By Geoffrey Nairn

Cost-saving intranets are here to stay

Intranets give companies the chance to become more horizontally focussed, looking at business processes, rather than functions

Intranets – private networks, based on Internet technology – are a rare beast in the IT world: simple to use and cheap to build, they are nevertheless capable of delivering real benefits. The promise may seem too good to be true, but many enterprises have taken their first hesitant steps with the technology and are now keen to extend intranets throughout their organisations.

A recent survey of 250 UK companies by the European computer services company, CMG, found that 94 per cent of organisations with intranets intended to expand their use over the next 12 months. More than 70 per cent of organisations in the survey had an intranet, the vast majority to improve internal communications.

A report on intranets by management consultancy KPMG quotes the typical example of a multinational company that had for years been unable to produce an effective internal telephone directory. It took too long to compile and was out of date before it was printed.


Judith Wainwright on the intranet concept: 'Life sciences companies are strongly committed at board level'

By building an intranet and making the directory accessible to any employee with a web browser, the company demonstrated its intranet could deliver immediate benefits.

Another convert to intranets is Omni, a trade association of 186 removal companies in 70 countries. Omni used to distribute a manual giving the rates for each of its members. This bulky 250-page document was distributed once a year and cost more than £12,000.

Last year, GE Information Services installed an intranet to link Omni member companies together to form a 'virtual' organisation. Removal rates are now stored on a central database and accessible by any Omni member via a web browser.

More importantly, they are updated continually – before the intranet, this was impossible and information could be up to a year old.

To improve vehicle utilisation, a bulletin board has been developed on which members can offer vehicle space to other members. This is linked to an e-mail facility, allowing members to respond quickly and offering time and cost-savings on courier and international fax charges – the traditional methods used by Omni members to communicate across time zones.

A growing number of similar success stories demonstrate intranets are here to stay, although uptake varies widely across different industrial sectors.

Nor surprisingly, telecoms and IT companies lead the pack, while the pharmaceutical sector has also been quick to adopt intranets.

"Life sciences companies are strongly committed at board level because it is obvious that knowledge management is a strategic function for them," says Judith Wainwright, marketing director with Pagoda, a UK-based management consultancy.

Pagoda has just published a report on intranets and their impact on sectors such as travel, finance, life sciences, energy, telecoms and publishing.

Manufacturing companies are reluctant intranet users, while companies in the life sciences and energy sectors see intranets as a means to share knowledge and, hopefully, reduce their time to market with new discoveries.

FT IT

MANAGING INFORMATION

Here and on the following page, FT writers look advances in online communications, particularly corporate intranets and extranets

For example, Glaxo Wellcome, a leading pharmaceutical company, uses its intranet to distribute a wide range of information generated at corporate, divisional and project levels. The intranet is also used by workgroups to communicate and by internal newsgroups to discuss issues such as strategic initiatives.

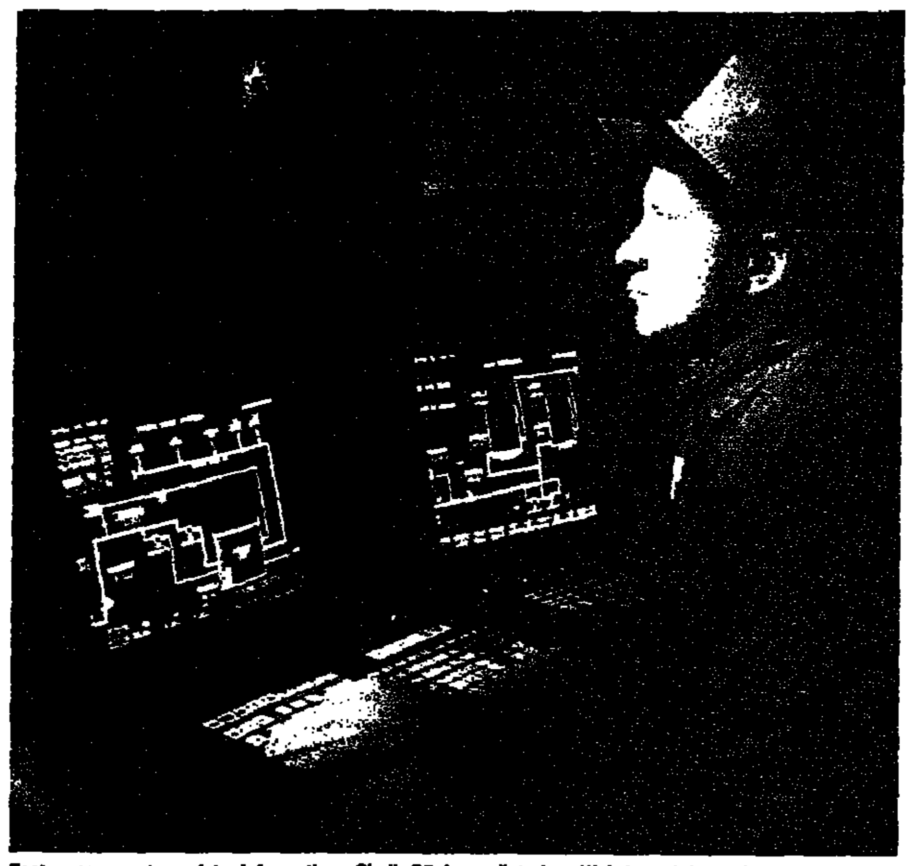
Discussion forums, implemented using either proprietary systems such as Lotus Notes or on an intranet, are becoming more widespread. However, their use is mainly in narrowly focused areas and few companies have given much thought to how these forums are led and coordinated, says the Pagoda report.

Discussion groups tend to use the technology as an alternative to regular meetings, without considering how to make best use of it. This theme is echoed by other consultants, for while intranets have taken off in a big way, most companies have yet to reap any real business benefits.

"Usage is still limited on the whole to improving internal communications," says David Bailey, director for CMG's advanced technology division. Sales and marketing departments could benefit greatly from intranet technology, he believes, but these functions are given low priority by IT departments, which are mostly responsible for maintaining corporate intranets.

"This technology won't flourish until IT departments understand the business needs of their users and explain the potential business benefits on offer," says Mr Bailey.

"The issue of who owns the intranet is key," believes Graeme Foux, chief executive officer for Momentus New Media, a consultancy firm which runs the Intranet Group, a non-profit forum for large corporate intranet users in the UK.


Faster access to safety information: Shell Oil has piloted a Web-based hazard communications system, developed with American Management Systems (http://www.amsinc.com). The innovative intranet application gives staff quick access to critical health and safety data about chemicals in the workplace. The application is being rolled out to 3,000 users across the company. The concept may be offered to other oil companies, chemical manufacturers and pharmaceutical companies.

"We find that some IT departments feel threatened by the intranet while others feel very empowered," says Mr Foux.

He believes intranets are much more than communications tools to distribute human resources or marketing information. "In the past information systems have been departmentally focussed," he says. "Intranets give companies the opportunity to become more horizontally focussed, looking at business processes rather than functions."

ICL, the UK computing company, claims to have achieved a more strategic use of intranet technologies with its Valuing ICL Knowledge (VIK) project. As its name suggests, the project started 18 months ago with the aim of making better use of the information in the heads of ICL's 19,000 employees in across 80 countries.

"We will never be able to put that on the intranet, but perhaps we can point people in the right direction," says Elizabeth Lank, director of ICL's knowledge management programme.

ICL's intranet is currently accessible to around 10,000 users who can quickly find information on customers, partners and projects around the world, as well as case studies, job adverts, location maps and telephone directories.

To manage all this information, individuals are charged with keeping their own information up-to-date – not always easy. "The technology is the easy bit; what is more difficult is motivating people to share knowledge," says Ms Lank.

THE POTENTIAL OF EXTRANETS • By Geoffrey Nairn

The future of business-to-business commerce

Extranets, based on Internet technology, help to eliminate the endless 'paper chain' in business. They offer big benefits in high-volume, low-value transactions which account for most companies' purchasing activities

Extranets promise to revolutionise the world of commerce by creating net-based trading communities where buyers can meet sellers and transact business in complete confidence.

The extranet, or extended intranet, is a secure business network of co-operating organisations located outside the corporate firewall. Because an extranet uses simple off-the-shelf Internet technologies, such as web servers, e-mail and browser software, it is cheaper than creating and maintaining a proprietary trading network.

"Implementing an extranet with your suppliers may be one of the most important moves your company makes," says QCS, a US electronic commerce company, in a recent report on extranets in the retail sector.

By eliminating the need for proprietary software and costly value-added networks, extranets reach out to a much wider market than proprietary electronic data interchange (EDI) networks.

EDI has existed for more than 20 years and has successfully streamlined the supply chain of carmakers, supermarket chains and pharmaceutical companies. But the complexity of EDI and its relatively high cost have traditionally excluded smaller companies.

Extranets are more than just a cheaper version of EDI, however. EDI was conceived to benefit primarily large manufacturers by automating their 'downstream' sourcing functions – the exchange of purchase orders, invoices and, later, payments.

Extranets aim to go much further by also eliminating the lengthy 'paper chain' that precedes the sending of a purchase order. Buyers spend much of their day on 'upstream' sourcing functions, such as leafing through catalogues, phoning to request details or changes and then copying and faxing Requests For Quotes (RFQs).

GE Lighting, a division of US giant General Electric, was one of the first to use an extranet to streamline its sourcing chain. The switch to paperless sourcing in 1996 allowed the company to cut the time taken to generate a RFQ from two weeks to less than a day using an extranet-based trading system called TPNPost. The system, which is operated by GEIS, GE's information services arm, has since been extended to other GE divisions and third parties.

GE claims it sourced around $1bn of goods and services in 1997 using TPNPost and predicts this will grow to $4bn this year.

According to GEIS, TPNPost can dramatically cut purchase cycle times and reduce costs, both through administrative savings and through the more competitive prices achieved by having a wider pool of suppliers.

GE claims to have obtained overall cost-savings of 5 to 20 per cent through more competive tendering.

"In the past, it would have been very difficult to work with more than two or three major suppliers," says Colin Billinge, European marketing manager at GEIS, because of the time required to research and prequalify new suppliers. "With TPNPost you can send the tender to a much wider market."

Any company can register as a potential supplier, which gives it access to TPNPost and allows it to post details of its product categories on the site. The company's details are cross-checked against commercial databases to ensure their validity.

Using TPNPost, buyers define their product needs and buying criteria, such as delivery times or quantities, which the system then automatically matches against the capabilities of each supplier. The RFQ is then sent to only those suppliers that meet these requirements, thus saving buyers from having to pre-qualify suppliers.

When a supplier logs on to the system, it is notified of tenders it has been invited to bid for and can respond automatically. The price can then be negotiated using secure e-mail.

"It is very much easier than receiving a manual RFQ because all the questions that a supplier is likely to be asked have already been answered [by the system]," says Mr Billinge.

TPNPost has been running since 1996 and now includes about 2,500 suppliers and more than 50 buyers. Initially, the site was used by GE buyers to purchase materials such as metalwork or components for use in GE products.

The extranet has since been opened to third parties while another application, called TPNMart, allows companies to buy and sell low-cost, high-volume 'expense line' products, such as stationery, via electronic catalogues.

An extranet typically uses the same infrastructure and technologies as the public Internet, but it has a battery of security features to protect confidential information from the prying eyes of outsiders – or rival suppliers.

The TPNPost and TPNMart applications use a combination of standard security technologies, such as the Secure Socket Layer protocol included in every web browser, as well as further security layers, such as firewalls, to ensure transactions remain confidential.

The TPNPost application has an additional security feature called Data Mixing. Price information – bids or counter-offers, for example – and item information, such as part attributes, drawings or supplier names, are never sent in the same data packet.

If a data-packet containing item information is intercepted, there is no related pricing information within the data-packet and vice versa. Extranets may represent the future of business-to-business commerce, particularly for high-volume, low-value transactions which account for 80 per cent of of most organisations' purchasing activities.

For extranets to extend more widely, standards will have to be developed so that selling organisations can easily participate in various trading communities rather than be tied by proprietary technology to the trading network of their largest customer – the criticism often levelled at EDI networks.

To achieve this goal, the Open Buying on the Internet (OBI) standard was developed last year by a consortium that includes 50 large US purchasing companies and suppliers.

The standard aims to be general enough to attract a wide audience and specific enough to be useful, with secure technologies such as SSL and digital certificates to keep traffic confidential and assure buyers and sellers of each other's identity.

JAVA CARDS

Struggle to keep down smartcard costs

From previous page:

encryption) and telecoms (e.g. GSM card) applications."

Visa, for example, has announced a programme to develop a Java card this year: it is working on a multi-application card combining credit, debit and stored value (Mastercard is backing rival standard Multos).

Netscape, the Internet browser company, has announced support for Java Cards. The cards will also be used in store loyalty schemes.

Mr Thiriet believes that "ultimately, the focus of competition among Forum members will shift away from proprietary differences, to factors such as how fast each Java applet is run, or how many services can fit on to a card."

Sadly, the availability of a standard card design will not lower the unit cost per smartcard. This is because the memory capacity and processing power needed for the Java Virtual Machine requires bigger chips than are used in smart cards at present. And the bigger the chip, the more expensive it becomes.

Typically, a Java card will need 13 Kilobytes of read-only memory to store the Java Virtual Machine, 512Kb of random-access memory and 4Kb of Eprom (or rewritable memory).

Smartcards currently range in price from $3, including the plastics, graphics, printing and customisation, up to $12. Java cards are likely to come in near the top of the range.

The challenge for smartcard makers is to keep costs down by programming as efficiently as possible. If you're not careful, says Mr Thiriet. "Java applets can grow very large, very fast. The size of the applet is directly linked to the size of the chip, so to have a cost-effective solution you must not develop too large an application", he says.

"You need good programmers and you need to optimise the application," adds Mr Thiriet. "In the US, good Java programmers are very easy to find, but in Europe it is harder because Java is not as well-known."

This is changing and Mr Thiriet believes that the most important thing about Java cards is that anyone, in any country from Japan to South Africa, following the Forum's rules will be able to develop applets that will run on any Java smartcard.

Forrester Research, a US based consultancy, says the Java card will further the development of smartcards and "carry Internet computing to a wallet-sized device".

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THE MOTOR INDUSTRY: Case study on IT management at Ford in Europe • By Joia Shillingford

A case of mastering the redesign

More than 3,000 IT staff and process engineers are working together to increase efficiency

Ford is one of very few companies to combine information technology and process re-engineering staff into a single team. "This works well when the company is involved in major redesign projects," says Dr Rod Edwards, director of systems for Ford in Europe.

Since Ford decided to run itself on truly global lines in 1995, the process leadership team has been involved in four significant re-engineering initiatives: in product development, production, order-to-delivery and after sales. Information technology underlies them all.

As part of the Ford 2000 scheme, under which Ford became a global company, the company wanted to rethink its core processes and make them standard across the business. In product development, it planned to reduce the cycle time for new products from anything up to 40 or 50 weeks down to 24.

It aimed to make all its three vehicle centres operate in the same way, and to reduce complexity and increase reliability. Complexity was to be reduced by introducing common systems as well as common components – such as steering columns, brakes, and so on.

Information management

At the same time, the process leadership team took the opportunity to introduce a new product information management system ('Pin' for short). This is based around a computer-aided design/computer-aided manufacturing (Cad/Cam) package called 'Ideas' from US-based SDLC.

The package is being rolled out to all the vehicle centres. This is a big job because designing a product with as many moving parts as a car is complex. However, Ideas is already being used for all new vehicle programmes.

Now vehicle styling can be achieved on screen, which reduces the amount of clay models that have to be made. Photo-realistic images of car designs can be rotated easily to obtain different viewing angles. And Cad is also used for crash simulations and to simulate car ride and handling.

Previously, Ford had used different products in different divisions including PDGS, ComputerVision and Parametric. Ideas was chosen because the product was a good fit in terms of functionality and had the potential to be extended. Dr Edwards says: "We also felt that SDLC was a company we could work with."

In production systems, Ford's drive is towards lean manufacturing. Over a period of five years, it wants to reduce the cycle time between a part arriving at the factory and being used in a car to one day. At present, the cycle time is four or five days.

Key to this initiative is a new in-line vehicle sequencing system (ILVS), a powerful computer system which enables a factory to work out the most efficient sequence to build vehicles in. For example, says Dr Edwards, operators will be overloaded if they have to build several high-specification luxury cars in a row.

Once the sequence has been worked out, the factory knows what parts it will need that day. Having them delivered just before they are needed means inventory costs are lower, less storage space is needed, production lines are not cluttered, and there is less movement of parts around the factory.

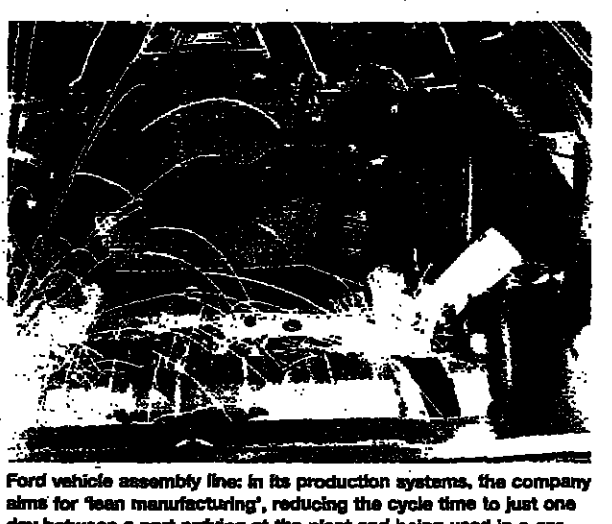
The ILVS, which is now in use in all Ford's factories, can also reschedule in real-time. For example, if one red luxury car needs to be resprayed, another red luxury car can be substituted so that the most efficient sequence is not thrown out.

Because the minicomputer-based ILVS system is critical to the running of the factory, Ford has both "hot" (ready to go) and "cold" (ready when computers are added) disaster-recovery facilities in place so it never stops running.

Data warehouses – large databases of company information – are also used by Ford to provide real-time information to factory work teams. These provide feedback that can help them improve quality and efficiency.

For example, if a number of customers are reporting that there is a dirt on, say, a door panel, the work team can figure out why this is happening and take remedial steps.

The system also gives real-time information and cumulative statistics on machine



Ford vehicle assembly line: in its production systems, the company aims for 'lean manufacturing', reducing the cycle time to just one day between a part arriving at the plant and being used in a car

performance. So, when a machine is not working properly, staff can see whether this is simply because it is waiting for another part (to perform the next job) or whether it is out-of-order. If there are frequent problems, data from the system can help staff to work out why, and resolve problems more quickly.

The real-time system includes statistics showing the number of vehicles produced and performance against targets, so any slippage comes to light faster.

In addition, Ford has started to measure factory productivity in new ways. Traditionally, the industry has measured it in terms of the man hours taken to produce a car. But Ford now includes other measurements in its calculations, such as how efficiently inventory is used.

This should help the company fulfil its goal of reducing the time from customer order to delivery to 15 days. After-sales objectives include capturing as much information as possible about the customer experience into a database.

Ford's quality and process leadership team includes 3,000 IT staff and 100 process engineering staff. Responsibility for quality was added to its remit after the team had already been set up.

Many of the process re-engineering staff are seconded from the company's lines of business for specific projects. But there are also some dedicated process engineers. Dr Edwards says the company has also recruited process engineers from IT – "there is a lot of movement back and forth," he says.

In addition, the IT team is divided geographically, with systems developed in the UK, Germany or north America being rolled out to other parts of the world. Because different systems have to be able to integrate with each other, there is a lot of cross-border communication.

"Ford was one of the first companies to move heavily into videoconferencing," says Dr Edwards. Now video-conferencing is installed on personal computers and employees make use of Ford's intranet.

This private network is used, in particular, for training information on Ford's production system and to share details of implementation issues and best practice. Details of all Ford business processes are also on its intranet.

Typically, installing a system developed in one country in many others can be a complex process. The production system, for example, consists of 20 or 30 systems that integrate together. These have to be installed in 30 or 40 assembly plants across Europe and many others worldwide.

Future direction

So, as well as helping Ford re-engineer, the IT function is also redesigning itself. "We're looking more and more at getting external partners to help with implementation," says Dr Edwards. "It is important to be involved in putting in the first four or five sites, but there's no reason to be involved in the next 400."

He adds: "We have to increase our IT cycle times . . . and we have to speed up the roll-out of new systems by doing more implementations in parallel."

The company plans to buy in more software, too. However, Dr Edwards thinks that where a function is specific to the automotive industry, software will tend to be produced in-house.

"Yet the big challenge is not the technology," says Dr Edwards. "It's the process – making a cultural change that affects Ford's third of a million staff. Combining IT and process leadership has made that a lot easier."

Dr Edwards, director of systems for Ford in Europe: 'The big challenge is not the technology – it's the process'

A man of wide experience

Dr Rod Edwards has a first class honours degree in electrical engineering, an MSc in digital communication and a PhD in controls engineering from the University of Manchester, where he was a member of faculty in the 1960s. He is a Fellow of the Institute of Electrical Engineers.

□ Current title: Director plant floor systems, Ford Automotive Operations. Dr Edwards is responsible for providing information systems support to 160 Ford plants worldwide, and is the senior systems executive at Ford in Europe.

□ In 1994, he was appointed a Ford Technical Fellow, one of only five in Ford worldwide.

□ Previous experience: Dr Edwards joined Ford of Europe in 1969 and has held many systems management positions in the company including a posting to Germany. His previous job at Ford was as manager, product and manufacturing systems in Europe.

□ In 1995, Dr Edwards was appointed Visiting Professor at Cranfield University and, in 1996, Visiting Professor in Engineering Design at Sussex University.

GUEST COLUMN: Questions for directors on the 'Millennium Bomb' issue

This could be the year of panic

Lawyers are in for a field day if companies fail to act fast to defuse the Millennium bomb, warns former UK science minister, Ian Taylor, MP

Not many weeks ago, company directors were wishing each other a prosperous New Year, most of them in the expectation that 1998 will indeed lead to success. Yet, sadly, for many directors, this could turn into the year of panic. They will realise that impact of the Millennium bug – the year 2000 computer date-change problem, or 'Y2K' for short – will be felt well before the turn of the century and, in some cases, its effect will be 'fatal' for business. Directors had better ask themselves some tough questions.

When I first raised the 'Y2K' problem as minister, late in 1995, I was regarded by many in UK politics and industry as a suitable case for treatment. Since then, the seriousness of the problem has been more widely recognised.

The work of TaskForce 2000, which I set up under Robin Guenier and other groups, such as the British Computer Society and the Confederation of British Industry, has ensured that awareness of the seriousness of the issue has spread – but not far enough.

It is estimated that more than 50 per cent of companies have not yet acted on the problem. The CBI report a "dangerous reluctance" amongst companies to convert concern about the matter into *action* to solve the problem. The new government *has* carried on the campaign within the UK and the European Union: it did the right thing in setting up Action 2000 – but only after several months' delay, made worse by the appointment of a very much part-time chairman. Time is not something we have on our side!

But why should directors panic? For a start, is your company secure in its position in the supply chain? Some leading enterprises are setting dates later this year beyond which they will terminate contracts with companies unable to guarantee satisfactorily that their systems comply with Y2K compliance standards.

Some of these big corporations are reluctant to provide hands-on assistance to smaller suppliers because of legal liability risks.

Unilever has estimated that up to a fifth of its smaller suppliers may not meet the compliance requirement in time and are therefore likely to lose their business with the group. It is worth recalling that Midland Bank estimates that one-in-five companies may not survive the bug, so Unilever's situation is likely to be echoed in other sectors.

The UK government is getting tough, too. Has everyone caught up with the implications for those dealing commercially with the Social Services Department? The minister, Frank Field, in a written answer on December 12, 1997, stated that 'if we become aware that an organisation or supplier will not become Year 2000 compliant to our timetable . . . we will review our contractual relationship with them, and consider alternative sources of supply.' *(Hansard, column 733).*

Presumably the 'timetable' will be the date set for compliance by UK government departments of December, 1998, as against the deadline I had set of the end of September this year.

Another reason for concern by directors is the legal position: has the company disclosed the size of the problem to the shareholders? Has it recently issued a prospectus without disclosure?

I am told by specialist lawyers that no director has an excuse that would hold up in court that he or she was 'unaware' of the problem.

In addition, is your company legally protected in relation to its own products and in its outsourcing contracts? Watch out for the domino effect in supply chains. Lawyers are in for a field day, I am afraid.

Before you turn to your insurance policy as a comfort, I should point out that insurance companies are taking cover themselves. The Association of British Insurers is warning companies that they cannot necessarily expect to be insured for problems the millennium bomb causes, and that many policies are to be rewritten with specific exclusion clauses. In the event of a claim, there is certain to be a challenge as to whether

Ian Taylor: 'Company directors had better ask themselves some tough questions'

the company had taken preventative measures which is just what so many have not done.

If I have raised a few alarm bells, then all to the good. For those inspired to go off and start work immediately, there is more bad news. For any company reasonably dependent on computers for production, accounting, marketing, analysis and supply, there may not be time to correct all the systems or the embedded chips – nor the available expertise to do so. So it will

Turn to back page

IT MANAGER PROFILE: Wendy Merkley of Swiss Re Life & Health • By John Kavanagh

One woman's experience as a global head of IT

A successful manager sees a wider role for women in the male-dominated world of IT networks

Women are in a minority in information technology and even more so in IT management.

Over the past 30 years, Wendy Merkley has worked her way up from data entry operator at DuPont in her native Canada to global head of IT at reinsurance company Swiss Re Life & Health, based for the last two years in London.

Swiss Re Life & Health was formed from the takeover by Swiss Reinsurance of Mercantile & General Reinsurance, where Mrs Merkley was already global head of IT. She has spent much of the last year travelling the world to consolidate and reduce the number of data centres run by Swiss Re Life & Health – eight when she started, supporting 80 different systems.

Her travels have highlighted different rates of success of women getting into IT management in different countries.

"In Canada, being a woman had little impact on my career. I was taken seriously quite early on," she says.

"My North America management team is four men and four women. In the UK, it's five and two – and in Zurich it was originally nine men plus me; now it's 12 men and two women."

She believes that companies can benefit by having more women managers.

"It's possibly more natural for a woman to relate to what people are going through in their personal lives," she says. "I've coached many husbands on my staff in juggling children, home life and work. Men seem to be more comfortable discussing these things with a woman, who's probably been through it herself. They often find it easier talking to me than they have to a male boss in the past."

She adds: "I'm not women's lib about this. Anyone can get to

Skilled on many fronts: Wendy Merkley 'knows how to juggle children, home life and IT management'

management – just get on with it."

"Just getting on with it" in IT at Swiss Re Life & Health demands the right attitude.

"We need IT skills but not just people who are in IT for the sake of it," Mrs Merkley says. "More importantly, we need people with the right attitude, who want to work for a global organisation and add value to the business.

"Most people can learn new technology: the challenge is to get their heads into the business and into a business team attitude. Sometimes they work in virtual teams with other offices. Sometimes their work has to be adaptable so it can be used elsewhere. Sometimes we need them to travel to Zurich or New York at a couple of days' notice. Not everyone wants this. In fact I've actually talked some job applicants out of joining us."

Her own travels take her between the main data centres in Zurich, the City of London and New York, and smaller ones in Montreal, Toronto, Melbourne and Johannesburg, plus another in London run by Cap Gemini, a facilities management company. These serve similarly dispersed offices.

She has 60 IT staff in London and a similar number in New York, with 24 in Zurich and a dozen in Johannesburg. Each centre has local management, and they all meet three or four times a year. "Every office was going its own way," she says. "We did an inventory of all the application systems and found around 80. We had to set up a database to keep track of them all."

All this is now changing quickly. "We had three data centres in North America; we now have one in New York. We also now have one database tool, Natural, running on IBM mainframes.

"The basic system is also being ported from New York to the UK, so we will have the same core technology in both centres – the same databases and data dictionaries. This means 65 per cent of our business will then be handled by similar systems."

Further consolidation of the main centres is possible as Mrs Merkley looks at moving the former Swiss Reinsurance Life & Health Division systems in Zurich to London.

Meanwhile, the former Mercantile & General contract with Cap Gemini expires in March 1999. Mrs Merkley is already pondering whether to consolidate that operation, too, into Swiss Re's London centre and bring its old systems up to date, or to continue to contract it out.

On top of all this she is leading development of an intranet as a key project in 1998, with extranet access for clients, plus electronic data interchange for standard transactions with clients. She is also looking at the potential of a client/server set-up for later.

"We could have gone straight to client/server during all the consolidation work but we had a very good and robust system that was only five years old and it could have taken us two years or more to get to the same point with client/server," Mrs Merkley says.

"We won't use client/server for back-office systems but for front-office applications such as analysing our business. That way we can leverage our existing investment in mainframes."

That investment in mainframes and the client data it manages is already being built on through substantial data warehouse activity, which Mrs Merkley refers to as knowledge management.

"The life and health insurance markets are changing rapidly at present," she says. "With the continuing decline of the welfare state in the UK and growth in popularity of private medical insurance, long-term care and other related policies, we have had to adapt to change rapidly and develop the ability to manage vast amounts of information on risks. Indeed, the reinsurance market is all about managing risk.

"To do this successfully we need access to all the information available to enable us to make critical decisions. This means Life & Health is ahead of the rest of the group in developing data warehousing and other information and knowledge management capabilities. We are using our expertise across the whole of the group to raise the level of awareness and capability in data warehousing."

THE WINTER OLYMPICS • By Rod Newing

IBM in snow trial

After the problems in Atlanta, both IBM's systems and its whole Olympic future are on trial in Nagano, Japan

With just three days to go, this year's Winter Olympic Games in Nagano, Japan, will once again be heavily dependent on the support of IBM, the world's largest computer company.

However, the future of this long-term partnership is currently uncertain, with further negotiations doe to take place after the games end. IBM, provides sponsorship to each Olympic games through the provision of its own equipment and services, as well as acting as integrator for the other technology sponsors' products.

IBM has been involved with both the summer and winter Olympics since Squaw Valley in 1960. It is working under a long-term contract with the International Olympic Committee (IOC) that allows systems to be re-used, reduces risks and costs and smoothes the transition between games.

However, things went wrong for IBM at the last summer games in Atlanta, when the world's press were initially unable to get results. The problem was caused by the World News Press Agency (WNPA) system, which supplied a common results service to eleven national and international wire services. This was a newly-built system that replaced the individually tailored 'news feeds' supplied by previous games.

"The press agencies had *slow modems (the device* that translates the data from the telephone line into computer code) and wanted full acknowledgement of each packet of data," explained Ron Palmich, director of IBM's Olympic games project, speaking during the Atlanta games. "This meant we had to transmit results to each agency in turn. We solved the bottleneck problem by sending the data to all of them at the same time, without acknowledgement, and everything then worked fine."

A problem such as this should never have passed the testing stage. But Mr Palmich had an astonishing explanation: "None of the agencies wanted to pay for a line to test it, so testing was done by diskette." The test should have been carried out live. However, the overall *systems management of the* games, which cannot be subjected to a full-scale test, ran well.

IBM has looked at the agency results system carefully since Atlanta. "We have worked closely with the agencies to document their requirements and the International Olympic Committee has participated in the discussions," says Victor Tang, director of client relations for IBM's Worldwide Olympic Technology. "We have redesigned the technology, which we have checked with the agencies, and developed a set of operational tools to monitor the system. It has formed part of our 14 months of continuous testing for the Nagano systems."

Although smaller in scale than the summer games, the Nagano Olympic Organising Committee (NAOC) still has to arrange the equivalent to 15 world championships, compared with 40 in the summer. They have the same problem as any Olympic organising committee, in that they have to start from scratch, build up towards a non-negotiable start date and then dissolve the whole organisation after the event.

The long-term sponsorship deal means that the IOC has a perpetual licence to use the software written to support the Olympics, although IBM retains ownership. Unlike the heat of Atlanta, the hardware and networks will have to cope with a cold, windy and wet environment. IBM also has to meet the non-negotiable start data, as well as coping with last-minute changes.

Computer tests in Nagano: the official Internet website is designed to handle record numbers of up to 100 million 'hits' a day. The Olympics' website is: http://nagano.olympic.org *Pictures by IBM*

January's snow-falls in Japan's 'snow country' were the last element necessary to complete preparations for the 18th winter games

The systems in use in Nagano are essentially the same as at Atlanta, with many having been used since earlier games. The software has always been multilingual, working with English and French, the two official languages of the Olympic games, together with the local language for each event. In this case, the software works with the local Japanese *Kanji* alphabet, for which each character requires double the space of a normal character.

The main change for Nagano is that Info 98, the games' internal information system, has been 're-architectured' as an intranet application. It uses the Domino and Notes products from Lotus, which became an IBM subsidiary too late to be considered for use in Atlanta.

John Chiavelli, who manages the official Internet site *(http: //nagano. olympic.org)*, has the task of capturing the spirit of the games, electronically. "The use of sports Web sites is growing seven-fold a year," he says. "We set a record of 17m hits per day in Atlanta, but we have designed the Nagano site to handle up to 100m."

As at Atlanta, visitors to the site can send e-mail to their favourite athletes, who read it at the private "Surf Shack" that IBM runs for them in the Olympic village.

To run the Nagano Winter Olympic Games involves two S/390 mainframe servers, 85 RS/6000s, five AS/400s and 4,000 desktop and notebook PCs.

Although individual elements of the system have been tested for 14 months, it *is impossible to conduct* a full-scale test of the system. A problem in common with all the Olympic systems is that they have to be capable of use with only minimal training by many of the 36,000 volunteers and the other 31,000 members of the Olympic family, consisting of officials, coaches, athletes and the media. "The winter games are smaller in scale than the summer games, but there is much more time-dependency," points out Tom Furey, IBM's general manager of worldwide Olympic technology. "There are more high-speed events and you have the vagaries of having events postponed because of weather conditions. There are fewer problems to worry about, but they are more intense."

IBM's chief executive, Lou Gerstner, along with president Juan Samaranch of the IOC, agreed over a year ago that the two organisations, together with the organising committee, would form an executive steering committee. "All parties focused on the major issues ahead of time and the new management system has worked very well for Nagano," says Mr Furey. "The IOC has also become incredibly knowledgeable about the problems involved in providing information."

But it isn't just IBM's systems that are on trial in Nagano. IBM's long-term sponsorship contract with *the IOC* expires *after the* Sydney games. However, an option to extend it by four years to cover the games in Salt Lake City and Athens was not exercised by the due date of the end of 1998.

"We told the IOC that we would like to do it if we can work out the details," says Mr Furey. "We've been in negotiation with the IOC and we have agreed to continue that negotiation after the *Nagano games because* we have both run out of time."

IBM has a good chance of enhancing its reputation in Nagano during the 16 days of the Winter Olympics, which run from Saturday, February 7 to Sunday, February 22. However, if there are any high profile technical problems, then EDS, the IT services company and lead sponser of the World Cup '98, is waiting in the *wings and it has already* indicated its desire to discuss the possibility of taking on the lead Olympic sponsorship.

An FT Survey on the Winter Olympics will be published this Friday, February 6.

Impressive facilities put up for the winter games reflect the high quality of Japanese architecture

GUEST COLUMN

Act now to defuse the Millennium bomb

☐ From previous page:

cost more than you think, and may require prioritisation of the areas on which remedial work is conducted.

In other words, parts of the business may not survive. And remember, the reason why correction should be carried out this year is not just the problems I have mentioned above, but the requirement for testing, which is fraught with difficulty, could take some months and a considerable chunk of the overall budget.

So perhaps the auditors will look kindly on the treatment of costs? Sorry. The UK's Accounting Standards Board published, in November 1997, draft rules requiring companies to disclose the costs and write them off against profits. They can't be treated as exceptional items.

These rulings could create quite a dent in a company's profitability, and not one which can be deferred. Auditors may start to qualify *accounts of some companies* over the next accounting period if insufficient progress in tackling compliance is discovered, and the auditor will stick closely to its role as only to review the quality of the management's preparations, not to sort out problems as part of the audit process. In addition, the Financial Services Agency has indicated that it will intervene where necessary in the area it regulates to protect investors, or market integrity. It is not convinced that companies have taken the right Y2K measures. Its chairman was quoted as saying that "our consistent message to firms in the financial sector is that they should all by now have a compliance project in place which allocates executive responsibility, requires regular reports to the board and furnish necessary resources."

This is a sensible requirement. *It indicates that* dealing with the problem is a management responsibility at chief executive level – not just a technical matter. Do *not* rely on the technical manager!

What about government itself? We know that correcting the problem in the UK's central government departments will cost £370m and should largely be finished by the end of this year. *(Hansard, November 27, 1997)*. But when I asked the Chancellor of the Duchy whether the cost for public services as a whole would be well over £1bn, he replied: "No one has an accurate estimate of the ballpark figure for public services."

Which must mean that a full compliance audit has yet to be completed. I suspect, in agreement with the Liberal Democrat spokesman, Malcolm Bruce, that the figure will end up nearer £3bn.

This is not difficult to justify, especially when compared with the billions being put aside by the largest private sector companies. For example, Mike Smith, a professor at St. Bartholomew's Hospital in London, has estimated that the cost in the National Health Service is likely to reach £500m, for which the trusts have made no financial provision.

He added that a 10 per cent computer failure rate would lead to up to 1,500 deaths. No wonder the chief executive of the NHS has described millennium compliance as the "highest non-clinical priority in the NHS".

But statistics like these might be said to create panic. The only way to avoid it is to make a massive effort to tackle the problem, devote the necessary resources, start to prioritise key areas, and cancel all leave over Christmas and New Year at the turn of the century. And take care on your way to the Millennium Dome.

The writer, Ian Taylor, is Conservative MP for Esher and Walton. He was Minister for Science and Technology in the UK's previous government. He is a director of Hudson Venture Partners and of Navision Software UK.